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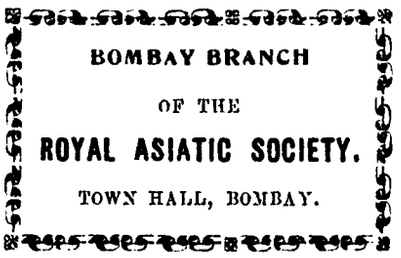

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Hon'ble the Revenue Member.

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Report on the future of Irrigation on the Deccan Canals with special reference to the cultivation of sugarcane

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BY

M. WYNNE SAYER,
Secretary, Sugar Bureau, Poona.

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GOVERNMENT OF BOMBAY.

FINANCE DEPARTMENT.

Resolution No. 2902.

Bombay Castle, 3rd January 1925.

RESOLUTION OF GOVERNMENT.

In September 1923 the Government of Bombay was led by public agitation, which culminated in a resolution passed in the Legislative Council, to appoint a Committee " to enquire into the constitution, government, customs, practices, rules, regulations and methods of business of the Native Share and Stock Brokers' Association of Bombay and to investigate any such complaints of the public and to make such enquiries with reference to any of the aforesaid matters or any other matter appertaining to the aforesaid Association as the Committee may deem proper and thereafter with a view to protect the investing public against the interested or irregular control of business, to formulate such definite proposals for the future constitution, direction and regulation of the aforesaid Association as the Committee may deem proper." The Committee began work on November the 6th, 1923, and signed their report on January 9th, 1924. The report was unanimous with one dissentient. Sir Wilfrid Atlay, the Chairman, is entitled to high praise for the conduct of these operations; and the thanks of Government have already been communicated to him and to all members of the Committee.

2. A copy of the Committee's report was forwarded to the President of the Native Share and Stock Brokers' Association, to which a reply was submitted to Government in July 1924, with a detailed statement of objections and criticisms of the report and its recommendations. This statement was printed and published by the Association. The Committee has acknowledged with pleasure the help given to them during the enquiry by the President and Members of the Association, and Government gladly endorses this acknowledgment. Doubtless the position in which the public demand for an enquiry had placed the Association has led them to be somewhat extreme in their protestations. But Government would be lacking in their duty if they failed to impress upon the Association that the Association are in effect a body carrying on a public utility service, and that they owe a duty to the public, and that it is a function of Government to see that that duty is properly performed. It is true that a certain number of recommendations made by the Committee may deal with details of purely internal management; but if the public is to retain confidence in the Association, the Association cannot afford to neglect any details

3. In their report to Government the Committee stated that they thought that in some small part the general criticism against the Association's control of the Exchange was misconceived, but that on the whole the criticism and complaints were well founded. Government must accept this plain finding. Profound suspicion had undoubtedly been generated in the minds of the investing public regarding the administration of the Stock Exchange. Much of this suspicion was due to an ignorance of the conduct of the affairs of the Exchange for which the Directors of the Association are responsible. The report shows much laxity in the general administration. Rules and regulations were most difficult to ascertain; some were printed, some have never been printed or published; and no one, whether a member of the Association or the public, had any opportunity of ascertaining exactly what rules were in force. The report also reveals supineness in enforcing such rules as there were, and in taking disciplinary measures against members of the Association.

4. The Committee summed up the results of the Enquiry in 20 recommendations. Out of these the Association state on page 31 of their report

that they are willing to accept and adopt 11. These will be referred to hereafter.

5. On the question of the treatment of Corners the Association do not accept the views of the Committee. The Committee found that Rules 26, 26 (*k*) and 26 (*kh*) were " the fundamental cause of all embarrassment " in the affairs of the Association and proposed the abolition of these Rules. Around this point the great body of evidence taken has revolved.

6. The Committee have come to the conclusion that in order to suppress " the most sinister manifestation of speculation in Bombay, *viz.*, the frequent occurrence of corners ", there is only one cure; and that is that the short seller must be left to pay the penalty. The rule which they propose is as follows :—

> " The Committee may suspend the buying in of securities when circumstances appear to them to make such suspension desirable in the general interest. The liability of intermediaries shall continue during such suspension unless otherwise determined by the Committee. The right conferred by this rule shall not be exercised in the case of corners or over-bought or over-sold positions unless the Committee are satisfied that *primâ facie* case of fraud has been established."

The existing rule to which such exception has been taken is given on page 15 of the printed report. It amounts to this: that the Board of the Association has authority to declare that a corner exists and to fix maximum rates above which trading shall not be allowed. The difficulty of this rule as has been candidly admitted by witnesses on behalf of the Association, is that it allowed the bears to continue selling short, knowing that their loss must be limited by the maximum fixed, while it put no limit upon their gain if the bull failed. The Association have therefore agreed to cancel the rule in its present form; but they maintain absolutely that to deprive the Board of the Association of all authority of interfering with corners, as the new rule proposes, is wrong in principle, and will not in effect be a cure for corners, although it may have a disastrous effect on the Exchange market in times of excitement. For this reason they propose to substitute for the existing rule the modified rule proposed in the Minority Report which gives them power to declare a corner in any given security and to exclude it from the forward list.

7. Government have given their most serious consideration to this very difficult and contentious question. Whether the corners, which have damaged the fair name of Bombay in recent years, have been engineered by syndicates of bulls who deliberately set out with the intention of effecting a corner; or whether it be true, as the other school have argued, that no corner could be effected but for the reckless short selling of the bears, are questions which it is not necessary to debate in this resolution. The conclusion at which Government have arrived is that in agreeing to cut out from the rule the provision empowering them to fix maximum rates, the Association have removed the chief objection raised by any witness against the present rule; while in retaining the power to exclude any scrip which is being manipulated to the danger of the investing public, they have retained what in the opinion of Government is a power which can be legitimately demanded by those who are directly responsible for the control of the market. The Association have agreed to adopt rules and regulations which it is hoped will result in a more businesslike conduct of affairs. Government therefore are prepared, and believe that in this they will have the support of the public, to trust the Association with the power which this rule gives them. It will be for the Association to prove by their future administration that the public faith is justified, and to this end Government must require them to introduce at once the amended rules or report that they have already done so.

8. The following are the recommendations of the Committee which the Association stated in their reply that they are prepared to accept :—

> (1) To provide in the rules for consideration of complaints by the public, on the condition that the member of the public concerned agrees to accept the decision.

(2) To strengthen and enforce more rigidly disciplinary rules.

(3) To employ a paid Secretary, who shall not be a member of the Exchange.

(4) To enforce strict rules of partnership.

(5) To publish in English and the vernacular the rules, and make them available to the public.

(6) To exclude the public totally from the present Stock Exchange until separate provision can be made for them.

(7) To enforce a uniform form of contract note.

It was unnecessary for the Committee to lay down a form of contract. It is understood that the Association are directing the use of 2 official forms, as proposed in the minority report.

(8) To fix a minimum scale of commission or brokerage.

(9) To insist on Companies using a common form of transfer.

(10) To publish a daily official list (if the public will buy it).

Government consider this to be of more importance than the Association recognise. The cost is small and it is trusted that the Association will issue the list even at their own cost, if that prove necessary.

(11) To abandon the practice of ballotting for admission to the forward list.

Government understand that the Association agree in theory that all Companies whose shares are fully paid up and are registered in Bombay shall be entitled to admission to the forward list, and that they only are prevented from putting this theory into force at once by the impossibility of financing an extended clearing house.

(12) To abolish Sub-Brokers

The Association are very half-hearted in their acceptance of this recommendation, and state that the remedy is with the public and not with them. Government are not at all satisfied that the Association cannot insist on greater control by its members over these Sub-Brokers or touts. Government cannot believe that members of the Exchange are so careless or ignorant of their own business as to allow contracts to go out to the public indifferently in their own name, or, without their knowledge, in that of a Sub-Broker with whom they share the commission.

9. Of the recommendations which the Association decline to adopt, the following four are purely minor matters, the administration of which Government is content to leave to the decision of the Association :—

(1) That the name should be changed to the " City of Bombay Stock Exchange ".

(2) That the dates of general meetings should be altered.

(3) That the Board should retire annually and be called a " Committee of Management ".

(4) That the Arbitration Committee should be replaced by a panel of arbitrators.

A fifth recommendation was that the hours of business should be extended. The evidence showed that much heat was expended on the discussion of this question. Government do not desire to lay down any particular instructions, but only express a hope that in this matter the Association will show themselves responsive to public opinion.

A more important recommendation was that an annual declaration should be made by members as to the class of business they propose to undertake, *i.e.*, whether they intend to act as jobbers or brokers pure and simple. The division of Brokers into two classes of jobbers and brokers is one which will undoubtedly be for the benefit of the investing public; and the reply of the Association to this recommendation is not entirely convincing. But Government accept the views of the Association on the understanding that the rule will be enforced which prohibits members from trading on a client's

order, and from trading on their own account in their client's securities without disclosing the fact on their contract notes. Division into classes will doubtless follow in due course as business increases.

10. The only remaining recommendation relates to the abolition of blank transfers, regarding which a reference has been made to the Government of India.

11. Government are confident that though the investigations made by the Committee have not resulted in the recommendation of any drastic changes in the constitution of the administrative body, yet the public enquiry has of itself not been without good effect; and the publication of new rules adopting the recommendations which have been accepted by the Association, will undoubtedly do much to restore public confidence in the Association which had been shaken. Government will now await a report from the Association stating the steps they have taken to publish and introduce the new rules.

By order of the Governor in Council,

G. WILES,
Secretary to Government.

G. R. No. 2902, F. D., dated the 3rd January 1925.

To

The Private Secretary to His Excellency the Governor,
The Accountant General,
G. Davis, Esq., I.C.S.,
The Home Department,
The Revenue Department,
The General Department,
The Political Department,
The Legal Department,
The Development Department,
The Secretary, Legislative Council (for supply to the Members of the Legislative Council),
The Director of Labour Office,
The Collector of Bombay,
The Superintendent of Stamps, Bombay,
The Commissioner of Police, Bombay,
All Members of the Stock Exchange Enquiry Committee (by letter),
The President, Native Share and Stock Brokers' Association, Bombay (by letter),
The Director of Information (with a request that the necessary Press Note may be issued),
The Director of Industries, Punjab (by letter).

No. of 1925.

Copy forwarded for information and guidance to

No. 7287 of 1927.

Imperial Department of Agriculture in India.

From

D. CLOUSTON, Esq., C.I.E., M.A., D.Sc.,
Agricultural Adviser to the Government of India, Pusa,

To

The Secretary to the Government of Bombay,
General Department, Bombay.

Dated Pusa, the 28th December 1927.

Subject.—Report of the Secretary, Sugar Bureau, on the future of irrigation on the Deccan Canals with special reference to the cultivation of sugarcane.

Sir,

I have the honour to forward herewith a report by Mr. W. Sayer, Secretary, Sugar Bureau, on the subject of irrigation from the canals in the Deccan with special reference to the cultivation of sugarcane.

As the report is intended for the Government of Bombay, I do not consider it necessary to send it through the Government of India, Education, Health and Lands Department.

I have the honour to be,
Sir,
Your most obedient servant,
D. CLOUSTON,
Agricultural Adviser to the Government of India.

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Confidential.

From

The Secretary, Sugar Bureau,

To

The Secretary to the Government of Bombay,
General Department.

(Through the Agricultural Adviser to the Government of India, Pusa, and the Secretary to the Government of India, Department of Education, Health and Lands.)

Sir,

I have the honour to submit herewith my report on the future of irrigation on the Deccan Canals with special reference to the cultivation of sugarcane. I do not propose in this report to give a detailed description of the general conditions prevailing in the Deccan which have necessitated this enquiry. I propose to take as read all the reports and general details which have already been supplied to Government from many sources. Full details of all the aspects of the question have been given by Mr. Bristow, the Officer on Special Duty, in his report on this question and I can see no object in repeating them nor in quoting facts and figures which have already been submitted to and considered by Government.

2. The position shortly is as follows :—

The Deccan Canals originally put down as a protective irrigation scheme and lately bringing some revenue to Government by means of the irrigation dues obtained from cane grown under the canals are now a serious drain on the resources of the Presidency; this drain is likely to become intensified if the existing evil of high cost of cane-growing coupled with the low price of gur which is rapidly making cane-growing on all but the most favourable sites an unprofitable undertaking is allowed to proceed unchecked.

As the chief revenue from the canals is obtained from cane, any diminution in the cane area will have a most serious effect on the canal revenues and create a further deficit which will have to be met from other sources.

I regard the financial position thus created as extremely serious and I consider that *in all future dealings with the Deccan Canals the financial position should have first consideration—failing a mandate from the rest of the Presidency that they are prepared to meet further capital and recurring expenditure on unproductive canals and it is on this understanding that I base the recommendations in my report.*

3. I have carefully studied the proposals put before the Government in the form of the irrigation cess and they appear to me to represent the optimum method of obtaining for Government a proportion of the unearned increment which has accrued to the Deccan landlords through the advent of the canals. I would however emphasise here that *it is absolutely essential to see that the cess falls on the landlords and is not subsequently transferred to the tenant by any arrangement in his lease. I consider that in all future schemes Government's share of this unearned increment should be realised as a right and the resulting income placed to the credit of the canal with a view to making it a paying proposition.* At present a very large sum of money has been obtained by a few fortunate people at no cost to themselves, while the Government is faced with a heavy deficit which the Presidency revenues have to meet. It is obviously far more equitable that this deficit should be met by those who have benefited than that cultivators in other districts should by indirect taxation bear burdens which should rightly be placed on the shoulders of those to whom the canal has brought such prosperity. My only regret is that the proper perspective regarding such payment was not attained in the past.

4. I propose first of all to deal with the cane crop as at present grown for gur.

The cane crop of the Deccan has expanded in acreage with the opening of each new canal and at present the area is a considerable percentage of the total cane area in the Presidency.

The Deccan has a suitable soil which together with the climatic conditions and the ample water-supply has created favourable conditions for cane growing under proper control. At present, however, cane is grown on any kind of land to which water sufficient for cane can be supplied. Such free supply of water has in nearly all but the most favourable conditions resulted in the soil texture being heavily damaged by over-watering and this has necessitated heavy manuring to remedy the soil defects coupled with increased watering to cover up the inability of the soil to retain moisture properly, a vicious circle being formed which is rapidly ruining the land and has increased the cost of cane-growing to an impossible figure for general cultivation. As a result cane-growing has become unprofitable for all but those growers who are either utilising new lands or are so situated that free drainage allows of their lands recovering from the evils of over-watering. Such cases are, however, the exception and not the rule. It is therefore obvious that the first cause of the trouble is over-watering *and that this is the rule on all lands supplied with water for cane.* The remedy for this is clear. It is drastic and consists in limiting and controlling the water to all cane-growers to prevent over-watering. Mr. Inglis in charge of the Special Irrigation Division has proved and clearly shown that with proper water control cane can be grown equally well on Deccan land with less manure and that no damage to the texture of the soil is apparent under such conditions. It is therefore clear that the methods advocated by Mr. Inglis, with which I take it all are familiar, should be at once tried out on a large scale and Mr. Inglis should be given the opportunity of proving his facts on a canal.

I therefore recommend that Mr. Inglis be given the Nira Left Bank Canal, the rank of Superintending Engineer, the staff, irrigation and agricultural, to carry out his conclusions and the funds to make such alterations as he may require or desire for putting his established theories into practice and further be given sole control under the Chief Engineer of the Presidency.

5. The future of the whole of the Deccan area under canals is intimately bound up with the joint problems of irrigation and agriculture, and I consider that these subjects should be carefully studied together and not as at present separately. I consider that if an agri-irrigation station to deal with Deccan problems had been in existence or started with the first canal, the present condition of things would not have come to pass. I therefore advocate that an irrigation research station for experimental work on irrigational and agricultural problems be opened and maintained with a suitable staff to examine and deal with all such problems as they arise. This station should be under the control of Mr. Inglis but manned with the requisite agricultural and irrigation staff. I would further advocate the immediate opening of a similar station under the Sukkur Barrage where similar problems will doubtless arise shortly.

6. I now turn to the cost of growing cane and any possible remedies in this line. First and foremost here it is necessary to strike at the root of the trouble. It is no use advocating or practising any remedies *on land unsuitable for cane. Such land has got to be allowed to be forced out of cane cultivation by economic laws.* If land is damaged and therefore can only grow a cane crop by the agency of a totally uneconomic dressing of manure, such land must be allowed to go out of cane. On many lands now under cane, the texture of the soil has been so badly damaged by over-watering that an ever increasing dressing of bulk manure is required to bring the actual soil into condition to hold a cane crop, and the manure is virtually acting in the place of soil and proper cultivation. This coupled with a heavy top dressing makes up a large percentage of total cane cost and under such circumstances is absolutely essential if a crop is to be grown. *I advocate such lands being taken out of cane* as quickly as possible.

On new lands an immediate reduction of water is essential. This, as shown by the work done by Mr. Inglis, will enable the cane to be grown on less manure and if the Manjri method with limited and regulated distribution of water is followed, a reduction in cultivation and manuring costs is assured. A reduction in the number of sets can also be brought about, but all these recommendations require an intensive agricultural propaganda.

7. *Manure.*—The chief item in the cost of manure is the ever increasing cost of bulk manures. I have already dealt with this question as regards lands whose texture has been spoilt. As regards new lands and lands still in good condition, simultaneous green manuring with " urid " (Phaseolus radiatus) or some similar crop must be advocated and practised. No large concentrated cane area anywhere in the world is able to use Farm Yard Manure as a basic dressing as the supply can never approach the demand and the Deccan with its increased cane area has got to face this fact in the future.

The cost of artificial manures and cake can be reduced by wholesale purchase and the present figure for $(NH_4)_2SO_4$ and $NANO_3$ is below pre-war and no grievance can be felt against present prices of these manures on all lands in good condition, which are now growing cane. An immediate reduction in agricultural costs will make itself evident in the next year or so due to economic pressure; in many places this is already evident. An intensive agricultural propaganda is required to drive these facts home and the use of less water, less manure, fewer sets and in short the complete Manjri method should now be advocated by all in the Agricultural and Irrigation Departments dealing with cane in the Deccan.

8. *Ratoons.*—On all lands where the texture shows signs of damage, ratooning should be discouraged as it is one of the surest ways of rapidly increasing damage to land. On good lands also it should be discouraged as ratooning is not desirable under the Deccan conditions.

9. *Agricultural Propaganda.*—In the past the Deccan cultivator has been told different things by different people, all speaking as the representatives of Government. This must stop. *One policy and one only must be heard.* The Irrigation Department, the Manjri Staff and the Director of Agriculture in the past have all told the cultivator to do different things, a state of things which is not creditable to the organisation of the province. The Manjri method *shorn of its unpopular features* has been advocated, regardless of the fact that its utility under such conditions is severely impaired. In the past the policy has been only to advocate what the cultivator would like to do. Such a policy is futile and has in my opinion contributed considerably to the present state of affairs in the Deccan and it should be the immediate duty of Government to see that a suitable resolute policy takes its place with the definite point of view that what is best for the agriculture of the Deccan *and that alone* should be advocated.

10. *Manjri Farm.*—All the reports hitherto unpublished should now be printed up. This will enable the public to see exactly what has been done and what has been left undone. Experiments dealing with actual conditions in the Deccan should at once be laid down and the farm should be made to realise that as the Deccan Cane Farm, the problems of the Deccan cane-grower are its problems. No experiments carried on for a series of years calculated to demonstrate the evil effects on soil texture of over-watering as against the advantages of a lighter watering appear to be in existence. This is the chief problem of the Deccan and as such should have been clearly demonstrated at Manjri for all to see. The aim to be kept steadfastly in view is to raise an economic crop. Comparisons of the effects of different inch waterings on crop yield and soil fertility should be one of the foremost experiments as also the effect of long and short intervals between waterings. The Deccan cultivator does not require teaching to grow cane. He wants his technique improving and a clear demonstration of the evils of over-watering.

11. *Cane varieties.*—The Deccan problem consists of a cane to substitute for Poundia in case of disease—such a cane must not be lower in sucrose and should be equal if not higher in tonnage and require less water if possible. The above description leads clearly to the class of cane required and defines it. The collection of canes of all kinds now kept on the Manjri Farm for trial can be reduced considerably as a large number of them cannot possibly come within the limits laid down. More attention should be paid to cane disease. Manjri is growing a number of tropical canes from other countries and these canes have all got perfectly definite records behind them. No cane liable to a disease like mosaic

in epidemic form should be relied on for the Deccan and the greatest care should be taken to see that no disease exists undetected on canes under trial. South India and its canes are liable to great damage from mosaic and the conditions of resistance found in North India are in no way applicable to the class of cane suitable for the Deccan.

12. *Lands.*—All land under canals should be divided up into classes by the Irrigation Department and cane strictly confined to the class of land which will grow it successfully.

13. *Leases.*—Short leases should be forbidden for cane. I consider that the prohibition of ratooning will assist in this. I am of opinion that a great deal of the damage to land under the canals is directly attributable to the short lease system, which brings in a class of man whose sole aim is to get all he can out of the land during the time he holds it, irrespective of the damage he may do to it and neighbouring lands by such practices.

14. *Damaged lands.*—All lands rendered totally unfit for cultivation by salt or waterlogging should be acquired by the Government at its present value, drained, reclaimed and then leased (with the object of retaining for Government the unearned increment) to its former owners if possible at the full value. As waterlogging is undoubtedly prejudicial to the public health, such acquisition and reclamation by the Government is in my opinion legitimate, private owners having neither the means nor the skill to do such reclamation work. Partially damaged lands should be placed under water control and proper drainage provided and paid for from the increased cess chargeable—acquisition only being resorted to as a last resource. *At completion of all schemes involving acquisition the land should be leased again to its former owners* (with the object of retaining for Government the unearned increment) if the owners are prepared to accept it, and, in future to work the land under proper irrigation control to obviate any possibility of a recurrence of the former damage. In no case should such lands be sold.

15. *Water rates.*—I am of opinion that the rates should remain as they are, leases for cane land are still being readily taken, which points to the fact that no hardship is experienced.

16. *Water.*—Control of the water rights should always be retained and regarded as the permanent privilege of Government. It should be most carefully impressed on the Irrigation Department that the cultivator's over-watering propensities can in many cases be traced to the fact that he is uncertain as to his next supply. It is imperative that in any district handed over entirely to the Irrigation Department, no failure to supply water at optimum periods should occur. The whole crusade on behalf of less water rests on this assumption and I desire to emphasise this fact with all the energy that I can command.

17. *Irrigation projects.*—All future irrigation projects in the Deccan dependent on cane for gur as a revenue crop must be held up pending the action advised in the subsequent pages of this report.

18. *Gur :—The present price of gur.*—As apart from the cultivation and manurial costs of cane, the position of the gur market which governs the price of gur in the Deccan is of the utmost importance in this enquiry. My considered opinion as a result of the enquiries I have made is that the present price at which it is still possible to make a profit on new and undamaged lands represents the limit at which the present gur supply can be absorbed. The reduction in the area of cane consequent upon damaged lands being taken out of cane will serve to stabilise or slightly increase the price figure. Cane is in many places still being grown not because it pays but because if it is not grown the man's debt to the sowcar will be forcibly recovered. In many cases also men are unwilling to loose the social status of a cane-grower and prefer to lose money instead. Time and economic pressure will tell and a reduction in the cane areas may be expected to show in the next year or so, if prices do not improve. The reduction in the loan limit for cane per acre is a very definite warning of the drop in value of the crop—a fact which all those dealing in it know to their cost already. But any extension of cane area under gur will bring about a drop in prices which will render all cane

growing for gur unprofitable. The rapid extension of cane cultivation for gur in the Deccan has resulted in the markets formerly served or catered for by established gur centres being taken up by other new centres whose shorter distance enables them to undersell the comparatively older centres by the amount of the Railway freight. No forward business is being done and the whole system of buying appears to have reached that hand-to-mouth stage so noticeable in the sugar world for the last two years, a policy forced on traders by an impending fall of prices. This points clearly to the fact that the take off is almost at a standstill and no dealer will in consequence run the risk of holding stocks. In short the market for Deccan gur cannot absorb any more of this class of gur at present prices. As a drop in price renders the cane position more acute—*a policy of limitation is the only solution.* This entails the following drastic action which is essential. *No land should be given out for cane-growing for gur on any new canal and further extension of the cane area for gur on present canals must be strictly limited.* To attempt under present conditions to increase the cane area for gur under new canals will merely result in a drop in price which will affect the revenues now being obtained from cane land under the old canals. The position then crystallises into the following :—

Losses are being incurred by the present canals on up-keep and interest charges. New canals have been built and designed to return a substantial proportion of their up-keep costs and interest charges by placing large areas of land under cane. The present position of the gur market renders any extension of the cane area for gur impossible. We are thus faced with a two-fold problem: How to maintain the old canals as at present and how to meet the charges on the new projects which are now prepared to take cane.

19. Proposals have been made for increasing the canal revenue by diversification of crops. While this may possibly increase the canal revenues to some degree in the non-cane area, it cannot possibly offer a solution to the cane question. The difference in the rates is such and the area under command so limited that an area sufficient to equal the cane revenue on any canal could not be found without a most expensive programme of remodelling and reconstruction. The canals have been modelled and arranged for cane and only a crop carrying an equal rate and demanding an equivalent water-supply can hope to take its place. No such crop is in sight as all crops capable of carrying an equal rate are not world crops but are grown to satisfy a small local demand which a large extension would at once swamp. This closes all other avenues for utilising the perennial commanded area under the canals and brings us back definitely to the fact that cane is the only crop which can carry the canal revenue and therefore cane is essential to the upkeep of the whole Deccan irrigation system. If cane cannot be grown for gur at a profit it is obvious that we are left with the alternative of making white sugar direct from it and following the practice of the rest of the cane-growing world.

20. White sugar is a world commodity, the market in India is practically unlimited and no such thing as a glut is possible under Indian conditions which are those of an importer. It is therefore clear that any extension of the cane area for white sugar manufacture would in no way affect the gur area and would enable the canals to put down the areas under cane for which they were designed.

21. I have read the proposals of the Pratt Committee regarding the future of the Deccan canal area under the white sugar industry. I agree with their opinions regarding the necessity for establishing a white sugar industry to enable cane growing and the canal revenues in the Deccan to be placed on a firm basis. I am not, however, in agreement with the remainder of their report which, I consider, omits the fact that under present conditions the remedies they suggest, while undoubtedly efficient, are vitiated by the fact that they are too strong to administer and a remedy with this defect is no remedy at all. I refer to their proposals to acquire and redistribute land wholesale as a method of establishing sugar factories. Acquisition of land is always likely to raise a storm of opposition and unless *it is the only feasible method* I am never in favour of it. The Belapur scheme raised much comment and opposition and a proposition of the size with which we are faced will be much more easily dealt with, if taken on more rational lines.

22. The white sugar industry may be carried on in three ways :—

1. When the factory grows its own cane.

2. When the factory buys its cane from independent growers.

3. When the factory partly grows its own cane and partly buys its raw material from independent growers.

In the first, there is only one profit to consider, that made on the sale of actual sugar, the raw material, viz., cane, being supplied at cost price out of the Company's own plantation to the factory. In the second, there are profits for two parties to be taken into account, viz., the growers and the mill. An independent grower will naturally expect some profit on his crop and this will make the cane supplies dearer to that extent. The third is intermediate between the two and therefore partakes of the good and bad points of both.

23. Now from the figures and the details supplied, it is obvious that the Deccan cane-grower is not making cane-growing pay, is often making a loss, and in no case making much more than his family wages. *This is evidence that he is producing his raw material at too expensive a rate.* As a sugar factory can only work at a profit when its raw material is being produced at a reasonable rate, it is evident that the factory must take the place of the cultivator and his inefficiency and deal direct with the raw material, *i.e.*, grow it itself. The fact that a sugar factory must have its own land if it is to grow cane really efficiently is granted, and this has apparently always been translated in the past as necessitating acquisition or purchase. This is not the case in the country where cane is grown in the most efficient fashion at the cheapest rate, *i.e.*, Java.

24. Now for the Deccan, the conditions approximate in many ways to those prevalent in Java, *i.e.*, the factories when established will be in a settled district with irrigation and a good class of cane. Very few Java factories own their own cane land but all of them produce their raw material *at the cheapest possible figure.* In Java all land is Crown demesne and as such no person who is not a native of Java can acquire land outright. The factories, however, are allowed to rent village land for one year in three on payment of rent and on this land the factory grows its cane employing the village labourers. The rent is settled between the factory manager and the village headman and approved by a Government official who is specially charged to see that no attempt is made to deprive the villager of his dues. By this method all savour of compulsion is removed and a fair deal assured to both sides.

25. I would suggest that on all new canals and as far as practicable on old canals the following arrangements should be made. The supply of water being absolutely in the hands of Government provides them with the necessary lever for enforcing action where it is required, *it being clearly realised that the action recommended is based solely on the absolute necessity for taking definite and immediate action to establish a white sugar industry as the only means of removing the present canal system in the Deccan from the region of unproductive debt.*

1. All lands classified and demarcated by the Irrigation Department as 1st class cane land should obtain water only on a special clause by which they are leased to a sugar factory for a period of 18 months—one cane crop—every three years, the rent to be fixed on the average rents for a term of years and approved by Government. No other water for cane to be given to the area. The factory will require at least 5,000 acres of 1st class land within a radius of eight miles of the mill.

2. The methods approved by the Irrigation Department to be followed both as regards agriculture and irrigation in growing the cane crop.

3. The land to be returned to the owner as it was taken over.

By such means the factory will be provided with the necessary 5,000 acres of 1st class cane land on which it will grow the crop with local labour at the cheapest rate and the question of the necessity of a sugar factory owning its land will not arise. Government will obtain its water rate enabling it to maintain the canal and the cultivator will make sure of obtaining water for two years on that land and also the rent for one year's cane crop.

Under such conditions all difficulties will be solved. Irrigation will be assured, revenue will be secured. The owner of the land will obtain full rent and take no risk. Labour will be employed and the sugar factory will be able to produce and control its own raw material and in this line its salvation will be in its own hands.

26. Any supplementary rules and regulations which may become essential may be fra ned later. *The main points for consideration being that without the establishment of the industry nothing can be hoped for and that therefore it is essential that the industry should be encouraged.* I now turn to the neccessary calculations and details relative to the establishment of a successful white sugar industry in a settled tract under irrigation like the Deccan.

27. In dealing with a proposition of this magnitude on which so much depends, it is obvious that one thing must have precedence. At present prices the sugar industry is working on a very narrow margin of profit and nothing but absolute efficiency in all departments will produce success.

The entire scheme should be in the hands of a single corporation run by men who understand sugar finance and worked by men who understand sugar in all its branches. There is no margin for the mediocre management to be found in the majority of small sugar enterprises in India. If such management is allowed to come in, it will bring the scheme to ruin and I warn Government that once such a scheme is wrecked I can see no possible hope for the future as no other remedies will stand an instant's examination from the financial side. The limit cost for cane per maund is 9 annas in the factory yard. The limit cost for manufacturing, all in, is Rs. 9 per maund of sugar and these figures can only be obtained by work properly organised and properly supervised. These results are being obtained in India to-day and they can be done again but they will only be attained by people who know their business.

28. In placing a proposition of such magnitude before the public, it is clearly necessary to make it evident that all parties are anxious to make the scheme a success, that Government and the corporation are working hand in hand in the interests of Deccan Irrigation with which is bound up the prosperity of the Deccan and of the Presidency also. A declaration of this kind will prove most reassuring to the investing public.

29. I consider that for the first few years, preferably five years, 4 per cent. interest should be guaranteed by Government on the capital, this rate of interest to be payable directly the corporation begins to take water and pay canal rates. In the case of industries like white sugar manufacture, which have to invest funds some time before they begin to bring in any return and for the first few years when everything is not at its optimum, such an assurance of assistance will be most welcome. In all such industries a period of transition has always to be reckoned with and so long as the corporation is paying canal dues and relieving Government of a heavy expense due to the upkeep and the interest charges on these canals, shareholders should receive the bare interest obtainable on a gilt-edged security. In view of the financial guarantee given by Government it is but fair that Government should have the right to appoint its own nominee on the directorate of the corporation.

30. All facilities such as roads, bridges, crossings, sidings, etc., should be readily granted and every effort made to get the corporation to function efficiently as early as possible, due regard being paid to the paramount importance of making the scheme a success when departmental and other considerations are likely to cause obstruction or delay.

31. *Manufacture.*—As regards the manufacturing side, no difficulties need be feared.

Properly designed factories for the class of cane they will have to work are merely a question of money; they can be erected and efficiently staffed and I consider over 11 per cent. is not too high a figure of recovery to hope for if the cane-growing side of the business is properly carried out.

32. *Agricultural.*—Here the greatest departure from Deccan practices will have to be made. The land will all be first class land demarcated by the Irrigation Department as recommended above, but the policy of the *cheapest cane per ton*

and not the largest crop irrespective of cost will have to be maintained and to do this will require strict agricultural supervision of a high class. I am confident that with average land of the 1st class, proper organisation and control, manures bought wholesale, and the latest agricultural practices in cane cultivation followed together with proper water control, an agricultural efficiency approaching that of Java is not beyond reach, and I can see no reason for agricultural costs rising above 9 annas per maund which is the figure I have quoted. I do not propose here to enter into any exact manufacturing figures as such do not come within the scope of this report, but I am confident that with efficiency in the field, efficiency in the factory and efficient management at the top a margin of profit is assured which will be attractive enough. The position of sugar in the world is now being regularised. Like all other world commodities it cannot be produced at a loss for long. Even if the attempts now being made to put the world's sugar industry on a paying basis do not come to a successful issue, we have here in this country at present a sufficiently high tariff to make the industry paying in suitable tracts under efficient supervision.

33. The duty is at present avowedly for revenue purposes and is Rs. 4-8-0 per cwt. of white sugar 23 D. S. and above. It brings in a revenue of over 6 crores of rupees per annum to the Government of India. It is not being felt as a hardship (I) as the price of sugar is now slightly over Rs. 10 per maund compared with over Rs. 30 per maund in 1920 and (II) because the increasing flow of imports proves that the duty has not interfered with consumption to any appreciable extent. Further, under the ægis of the import duty, and the high price of sugar in the post-war period the production of white sugar direct from cane has advanced nearly 250 per cent. in the last 7 years and the capital invested in the industry has steadily increased. I consider therefore that it is not within practical politics that the Government of India will favour reduction unless and until an equally remunerative source of untapped revenue presents itself, a contingency at present beneath the horizon. We may therefore for all practical purposes take the present import duty as established and under these circumstances I consider that not only will sugar factories on a large scale pay but a competent corporation of the type I propose will be able to show a reasonable return to shareholders.

34. I may mention here that Java produces its white sugar at Rs. 5 per maund. Insurance, freight and India's import duty raise this cost price to over Rs. 9 per maund delivered in Bombay. As Java produces the cheapest sugar in the world and as that island is India's main supplier, we may reasonably take it that the price of imported sugar in the port of Bombay is not at all likely to fall below Rs. 9 per maund of 82 lbs. as the Java manufacturers will not sell below cost unless forced.

In the Deccan districts, therefore, this sugar will sell at more than Rs. 10 per maund, thus leaving a margin of profit for our corporation.

35. There however remains the fact that white sugar enterprises in the Deccan to-date have not prospered and it is necessary therefore to draw attention to the real reasons.

The failure of the Nira Valley sugar concern and the fact that the Belapur Sugar Factory has not yet been able to pay a dividend should not be regarded as a proof that white sugar manufacture in the Deccan cannot be made a success.

The failure of the first is largely due to the fact that the management did not sufficiently realise that there is no profit on sugar at normal world prices made from cane purchased at a price which leaves a profit on the wasteful and extravagant cane-growing methods of the average Deccan cultivator. They failed to take note of the fact that while the cultivator is competing in a local market with similar inefficiency, the factory had to face a very efficient world competition and it is my personal opinion that the technical management was also to a certain extent at fault.

As regards Belapur, it possesses its own land, formerly *a sine qua non* in sugar manufacture ; but the land is not uniform cane land of the best class and this fact has already lowered their average cane tonnage to a very light figure despite the agricultural efficiency obtainable on a large estate. In addition, the factory was never designed to work a high-class cane like Pundia. These two points coupled with over capitalisation have handicapped the concern from the start.

36. The corporation as I plan it will start with the full realisation of those mistakes. It will only utilise 1st class land classified by the Irrigation Department as recommended by me above and grow its own cane under expert supervision and control. Its plant will be designed for the cane they will crush and the conditions under which they will work. It will have nothing to do with the gur rates and its staff will be the best obtainable and on its directorate will be people who have already made sugar manufacturing a success.

Under such auspices I am confident that the investing public will realise the soundness of the proposition and Government, the Deccan and all concerned will profit materially by it.

I have the honour to be,

Sir,

Your most obedient servant,

M. WYNNE SAYER,
Secretary, Sugar Bureau.

Pusa,
30th November 1927.

Conclusions.

1. In all future dealings with the Deccan Canals, the financial position should have first consideration, failing a mandate from the rest of the Presidency that they are prepared to meet further expenditure on the upkeep of and interest on unproductive canals.

2. It is absolutely essential to see that the proposed irrigation cess falls on the landlord and is not subsequently transferred to the tenant by any arrangement in his lease.

3. In all future schemes Government's share of the unearned increment accruing to land-owners as the result of introduction of a canal should be realised as a right and the resulting income placed to the credit of the canal.

4. The Deccan having favourable climatic conditions and ample water-supply from canals is very well suited for cane-growing under proper control.

5. At present cane is grown on all classes of land where water is available and overwatering with all its attendant evils is the rule.

6. Limiting and controlling the water-supply to all cane-growers to prevent overwatering is essential.

7. Mr. Inglis, Special Irrigation Engineer, has proved that with less watering and less manure the texture of the soil does not seem to suffer and yet equally heavy crops are obtained.

8. I therefore recommend that Mr. Inglis be given the Nira Left Bank Canal, the staff (irrigation and agriculture) to carry out his conclusions and the requisite funds. He should be raised to Superintending Engineer and given sole control and be direct under the Chief Engineer.

9. A proper Irrigation Research Station for experimental work on agricultural and irrigational problems be opened and maintained under Mr. Inglis with the requisite staff, irrigation and agricultural.

10. A similar station should also be opened immediately in Sindh to deal with the problems that will arise on the completion of the Sukkur Barrage Scheme.

11. Land unsuitable for cane must be allowed to be forced out of cane cultivation by economic laws. No improvements are possible on such land.

12. On new lands an immediate reduction of water is essential and the Manjri method of improved cultivation in its entirety, i.e., with limited and regulated distribution of water, should be followed.

13. Instead of applying bulk manure ever increasing in value, simultaneous green-manuring with *urid* (Phaseolus radiatus) or some similar crop should be practised. Artificials are now cheaper than before war and fewer sets should be used.

14. Ratooning should be discouraged on all lands in the Deccan and any practice by which any land in block holds cane two years running.

M H 33—3 con

15. As regards agricultural propaganda Government should see that only one policy is preached and no contradictory recommendations are made by the Agricultural and Engineering Departments in the Deccan.

16. All unpublished reports of the Manjri farm should be printed up and made available so that the value of the work done may be properly appraised.

17. At this farm which is the Deccan cane farm the aim to be kept steadfastly in view is the raising of an economic crop. Experiments showing the effects of different inch waterings on crop yield and soil fertility and texture should be standard on this farm, as also the effect of long and short intervals between waterings.

18. Only such canes should be tested on this farm as are likely to replace Pundia in case of its getting diseased or because they are equally high-yielding and require less water. Thick canes require much more attention to be devoted to them for diseases such as mosaic, red rot.

19. All land under canals should be divided up into classes by the Irrigation Department and sugarcane should be strictly confined to the class of land which the Irrigation Department declare will hold it.

20. Short leases should be forbidden for cane.

21. All lands rendered totally unfit by salt efflorescence or by waterlogging for cultivation should be acquired by Government at their present value, drained, reclaimed and then leased, with the object of retaining the unearned increment, to their former owners if possible at the full value. In no case should such lands be sold.

22. In the case of partially damaged lands, the supply of water should be controlled and proper drainage provided and paid for from the cess.

23. The water rates should remain as they are at present.

24. The Irrigation Department should see to it that no failure to supply water at optimum periods takes place and that no uncertainty is left in the minds of the cultivators as to the next supply.

25. All future irrigation projects in the Deccan dependent upon sugarcane for their revenues should look to the manufacture of white sugar and not *gur*.

26. The gur market is not likely to expand and at present prices cane cultivation for gur pays only on new and undamaged lands.

27. Any extension of cane-growing for gur will mean a fall in price and make the whole gur industry in the Deccan unprofitable.

28. No land should be given out for cane-growing for gur on any new canal and further extension of the cane area for gur on existing canals should be strictly limited.

29. Diversification of crops is not a complete cure for the canal revenues nor is there any crop to replace cane such as would require an equal amount of irrigation water or would be marketable locally without bringing about a serious drop in value.

30. If cane is grown for white sugar manufacture there is no fear as regards glutting the market as India is an importer and can absorb any quantity that the Deccan can produce.

31. I agree with the Pratt Committee as regards the necessity for establishing a white sugar industry to enable cane-growing and the canal revenues in the Deccan to be placed on a firm basis.

32. I differ from them in the matter of acquisition of land. I do not consider acquisition essential to the white sugar industry but recommend leasing of land be arranged as in Java for the factory to grow its own cane under its own expert supervision and control.

33. The Deccan cultivator is at present raising his cane crop at a figure which makes its use for white sugar manufacture out of the question. He should therefore cease to grow cane independently and this function be entrusted to the factory.

34. Legislation should be introduced whereby factories will be enabled to obtain on lease in a radius of 8 miles from the mill 5,000 acres of 1st class cane

land to plant cane once every three years. The rents to be settled between the factory and the land-owners at the average rate by a Government official to ensure a fair deal and the land to be returned at the end of the harvesting season just as it was taken over.

35. On all new canals and as far as practicable on old canals all lands classified and demarcated by the Irrigation Department as first class cane land should obtain cane water only on a special clause by which they are leased to a sugar factory.

36. As utmost efficiency is essential in the present world condition of the white sugar industry, I regard it as essential that the entire scheme should be in the hands of a single corporation run by men who understand sugar finance and worked by men who understand sugar in all its branches.

37. Government in order to show its interest in the successful working of the corporation should guarantee 4 per cent. interest on share capital during the first few years of the corporation (not exceeding 5 years) payable directly after the corporation has begun to take canal water and pay the water rates.

38. This will assure the investing public of the minimum return on their capital during the transition period.

39. In view of this financial liability undertaken by Government, it is most desirable that Government should have the right to appoint its own nominee on the directorate of the corporation.

40. All assistance in buildings, roads, bridges, crossings, sidings, etc., should be rendered to the corporation without unnecessary delay as otherwise they would hamper the corporation from functioning efficiently.

41. I am confident that with everything working at its optimum it is possible for the Corporation to grow cane in the Deccan at annas 9 per maund and to manufacture sugar at Rs. 9 per maund, all in, which will leave a margin of profit for distribution to shareholders as an annual dividend.

42. The price of sugar in the port of Bombay is not at all likely to fall below Rs. 9 per maund of 82 lbs. as a result of the present import duty of Rs. 4-8-0 per cwt. of white sugar. In the Deccan Districts, therefore, it will sell at more than Rs. 10 per maund, thus leaving a margin of profit for our corporation.

43. It is not within practical politics that a reduction in the rate of this duty will take place as it brings over 6 crores to the Government of India and no other substitute is in sight.

44. Sugar manufacture in the Deccan therefore can look forward to a continuance of this rate and under its ægis the Deccan can build up a flourishing white sugar industry on the lines sketched out above.

45. The failure of the Nira Valley concern and the partial success the Belapur concern has so far achieved do not prove, for reasons given, that white sugar cannot be manufactured in the Deccan at a profit. It is perfectly practicable to do it under the terms and conditions laid down in the body of this report.

M. WYNNE SAYER,
Secretary, Sugar Bureau.

2

Report

on the

Communications of the Nira Valley

BY

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and

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May 1938

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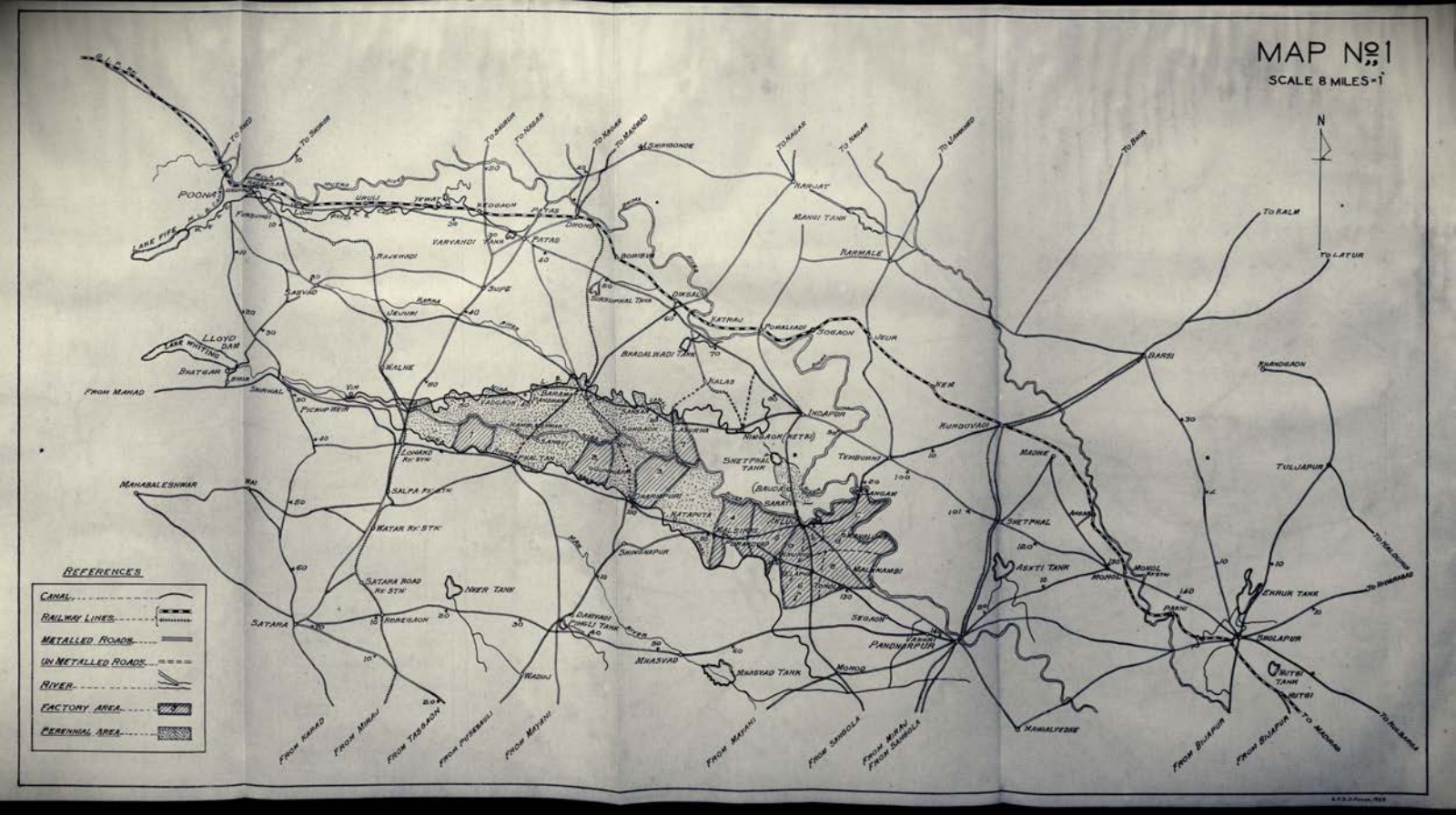
MAP No. 1
SCALE 8 MILES = 1"
N
REFERENCES
CANAL
RAILWAY LINES
METALLED ROADS
UN METALLED ROADS
RIVER
FACTORY AREA
PERENNIAL AREA
POONA
LAKE FIFE
LLOYD DAM
LAKE WHITING
BHATGAR
FROM MAHAD
MAHABALESHWAR
SATARA
SATARA ROAD RY. STN.
WATAR RY. STN.
SALPA RY. STN.
LONAND RY. STN.
PICKUP WEIR
SHIRWAL
WALHE
JEJURI
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LONI
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DHOND
BORIBYA
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KALAS
INDAPUR
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BAUDA
SARATI
TEMBURNI
SANGAM
KURDUVADI
MADHE
SHETPHAL
ASKTI TANK
MONOL
PAKNI
EKRUK TANK
SHOLAPUR
MUTGI TANK
MUTGI
MANGALVEDHE
PANDHARPUR
VAKHRI
SEGAON
MOHOD
MHASVAD TANK
MHASVAD
DAHIVADI
PINGLI TANK
NIVER TANK
SHINGNAPUR
KOREGAON
WADUJ
MAHAVAD
KARMALE
MANGI TANK
KARJAT
BARSI
KHANDGAON
TULJAPUR
KEM
TO KALM
TO LATUR
TO BIHR
TO NAGAR
TO MANMAD
TO JAMNED
TO NIRA
TO MADRAS
TO HYDERABAD
TO KALDURGA
FROM KARAD
FROM MIRAJ
FROM TASGAON
FROM PUSESAULI
FROM MAYANI
FROM SANGOLA
FROM MIRAJ
FROM SANGOLA
FROM BIJAPUR
FROM BIJAPUR

REPORT ON THE COMMUNICATIONS OF THE NIRA VALLEY.

CHAPTER I.

INTRODUCTORY.

Sugar Factory development.

1. The Government of Bombay have for some years past had under consideration the question of promoting the development of the Deccan Canals. As long ago as 1920 the Pratt Committee, and in 1927 Mr. C. H. Bristow, I.C.S., on Special Duty, recommended the establishment of sugar factories.

Report of the Deccan Canals Financial Improvement Committee.

2. Early in 1932, the Deccan Canals Financial Improvement Committee under the chairmanship of Mr. B. S. Kamat, M.L.C., recommended in its report that the encouragement of sugar factories should be undertaken, particularly on the Nira Right Bank Canal, in which area development had been extremely slow, although a great deal of land is very suitable for cane. The same Committee also pointed out the necessity for improved communications in the area without which development was not possible.

Mr. Evershed's Note.

3. As having some bearing on the matter, it may be mentioned that Mr. Evershed, when Executive Engineer, Special Irrigation Division, Poona, submitted a Note in December 1932 on the "Transport Facilities of the area commanded by Branch No. 1 of the Nira Right Bank Canal allotted for Sugar Factories" under the impression that railway extensions were out of the question. The note summed up the essential needs as regards roads for the area, and was referred to the Irrigation Conference under the chairmanship of the Commissioner, Central Division, which, sitting in January 1933, unanimously confirmed the recommendations made with slight modification of the urgency in which the improvements had been suggested.

Road Rail Report.

4. In 1932, Messrs. Mitchell and Kirkness toured India on an enquiry regarding the coordination of road and railway development and in their report published early in 1933 stated :

"From the various discussions we have had.....we are satisfied on the following points :—

(1) that this is a case for a joint road and rail survey being made in the area ;

(2) that this survey should be undertaken urgently in order to enable the firms who propose to start sugar refineries to take advantage of the present prospective tariff ; and

(3) that the proposed survey should be undertaken jointly by an officer of the Local Government conversant with marketing conditions in the area and by a railway Engineering Officer unconnected with the Great Indian Peninsular, Dhond-Baramati, Barsi Light, or Madras and Southern Mahratta Railways.

"These two officers after jointly surveying the area should submit a report stating what communications, in their opinion, are necessary adequately to serve the area ; and, if railway facilities are needed, on what gauge the railways should be constructed. As the matter is considered urgent by the Local Government and those interested, we have, in anticipation of our report, made this suggestion to the Railway Board."

Nira Valley Communications Enquiry.

5. In accordance with the foregoing, the officers named below were appointed to jointly enquire and report on the matter :—

Mr. W. A. Evershed, B.Sc., M.Inst.C.E., Executive Engineer, Public Works Department, Bombay.

Mr. R. O. C. Thomson, Assoc.M.Inst.C.E., Executive Engineer, North Western Railway, Lahore.

Terms of reference.

6. The terms of reference are :—

"To examine and report on the communications required to develop the Nira Right Bank and Left Bank Canal areas; and particularly to what extent those areas require—

(*a*) New roads,

(*b*) Improved roads, and

(*c*) Railway extensions and connection,

to enable agricultural produce to reach its market most economically.

"In the event of branch railway lines being considered necessary, to make recommendations as to the gauge on which such lines should be constructed."

Commencement of enquiry.

7. Mr. Thomson arrived in Poona on March 5th (1933), but Mr. Evershed was unable to hand over his charge and commence work until March 13th.

Nature of the enquiry.

8. While collecting preliminary information and data, a brief questionnaire varying in detail as necessary was sent to gentlemen and firms interested directly and indirectly in railways, sugar manufacture, and in the area itself. The various Chambers of Commerce were also addressed in the matter.

9. Towards the end of March a fortnight's tour was made for the inspection of all the important roads and railways, and for interviews with as many as possible of those who might be interested in one way or another in improved communications. This series of interviews with mamlatdars, municipal authorities, merchants of all kinds, railway officials, Public Works Department officials, and others furnished a quantity of information regarding trade generally, as well as statistics regarding the population served and existing trade routes. Collectors of the Districts and the Executive Engineers of the Divisions concerned were also consulted.

10. We take this opportunity of acknowledging the assistance kindly given to us by the many officials and non-officials whom we have consulted in the course of our enquiry.

CHAPTER II.

The Nira Valley and its Irrigation.

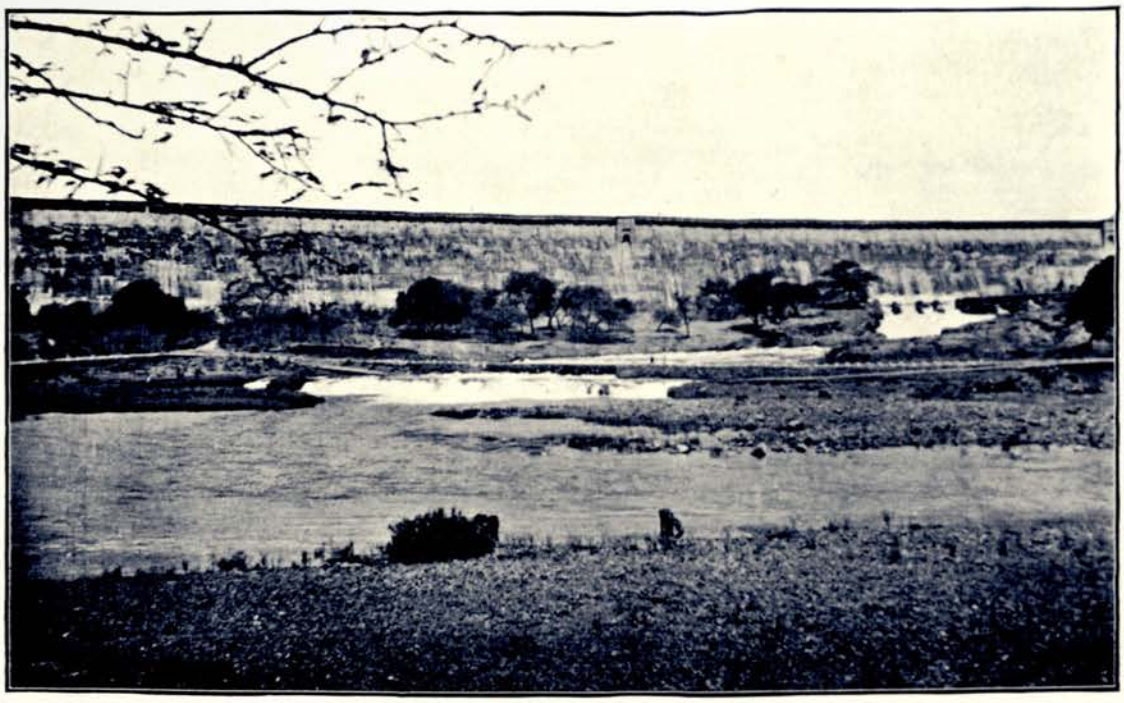
11. A brief description of the Nira Valley is desirable and will be clear on reference to Map I (frontispiece).

The River Nira.

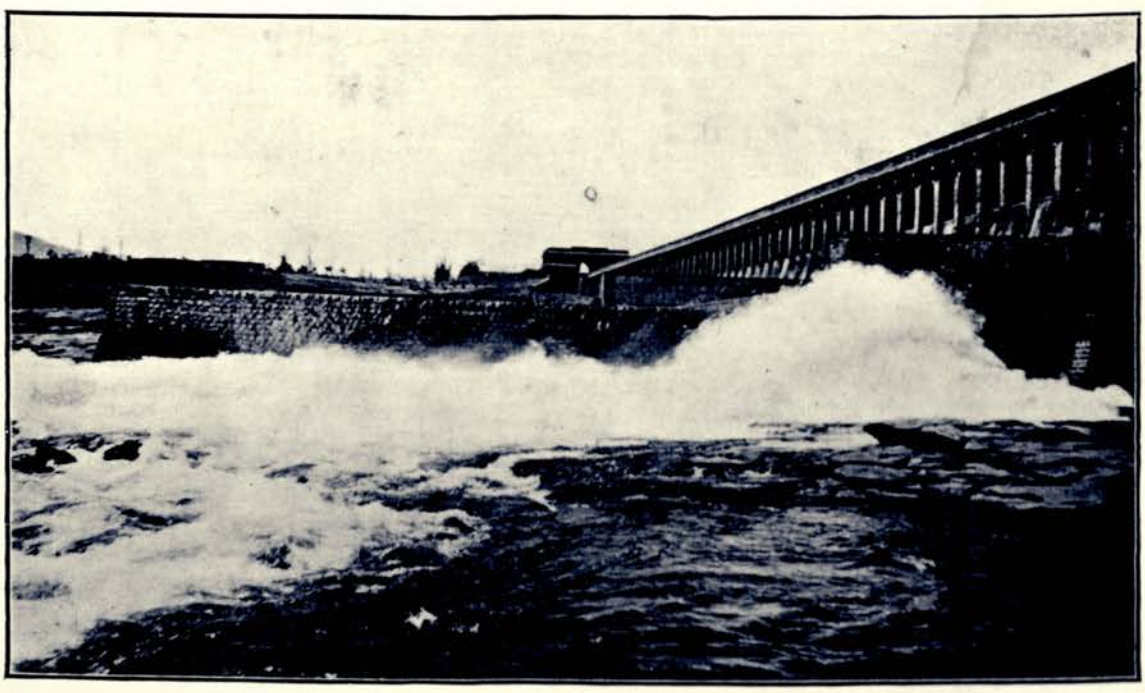
12. The river Nira is one of several rising in the Western Ghats and flowing eastwards eventually to join a large river (the Bhima in this case). The Nira has been dammed in the upper reaches to afford protection from famine by means of irrigation to the arid tracts lower down.

Bhatgar Dam.

13. The original Bhatgar Dam completed in 1891 provided storage of irrigation water for the Nira Left Bank Canal. The water released from the dam flowed down the river to Vir where a pick-up weir diverted and regulated the flow into the canal.



The Lloyd Dam—North End.



The Lloyd Dam—South End.

Lloyd Dam.

14. In 1912, the construction of the Nira Right Bank Canal was started concurrently with the enlargement of the storage at Bhatgar. The new Lloyd Dam, opened in 1928, provides an increase of storage from 5,313 to 24,198 million cubic feet, and the new canal starts from the original pick-up weir at Vir.

Cost.

15. The estimated cost of irrigation works in the Nira Valley amounts to over Rs. 7·00 crores of which the expenditure to date is about Rs. 5·33 crores. The sum at charge however is now Rs. 7·48 crores as the Nira Right Bank Canal does not even pay for its maintenance.

Irrigation.

16. The Nira Left Bank Canal was one of the first of the Deccan Major Canals to be started and may be said to be fully developed. Irrigation on the Nira Right Bank Canal started gradually in 1925, but on account of the falling rates for gul and more recently a general slump in prices in which the whole world has been concerned, development has been extremely slow, particularly in regard to cane for the cultivation of which the canals have been designed. Moreover the area commanded by this canal is impoverished in many ways and its people are poorer than elsewhere; consequently, they had neither the knowledge nor resources with which to start the plantation of cane. At the present time the Nira Left Bank Canal irrigates about 6,500 acres of cane, but although water for much more than this has been available on the Right Bank for some five years, there are only some 1,000 acres of cane. To encourage the development of cane up to the limit possible is the present policy, and it is in connection with this that our enquiry regarding communications is of particular importance.

Extent of canals.

17. The Nira Left Bank Canal is 107 miles in length and commands 150,000 acres of culturable land. Commencing at the Vir pick-up weir, it passes close to the important centres of Nira on the Madras and Southern Mahratta Railway, Baramati the headquarters of Bhimthadi Taluka, and continues as far as Indapur, the headquarters of the taluka of that name. It lies wholly within the Poona District.

18. Originating from the same pick up-weir at Vir, the Nira Right Bank Canal irrigates a large part of Phaltan State, and thence through Malsiras Taluka has, as its tail channel, the old Mhaswad Canal which commands lands right up to Pandharpur in Sholapur District. It is 127 miles in length including 20 miles of the Mhaswad Canal and commands a culturable area of about 500,000 acres.

Financial position.

19. It is obvious that with a capital expenditure of nearly four crores of rupees and so little development the Nira Right Bank Canal is not a paying concern, in fact the revenue obtained from irrigation does not at present pay for the maintenance of the work. It was with a view to putting this canal on a more satisfactory basis financially—for it is the general ratepayer who ultimately suffers—that the Deccan Canals Financial Improvement Committee recommended the encouragement of sugar factories on this canal, particularly on Branch I near Akluj, where conditions are eminently suitable.

Area available for sugar factories.

20. With this end in view, the question of how much water would be available for sugar factories has been recently investigated. In their joint letter No. 638, dated 11th March 1933, the Superintending Engineers, Irrigation Development and Research Circle, and Deccan Irrigation Circle, reported to Government that 19,000 acres of cane could be guaranteed water for this purpose in addition to the area already under cane. This figure however does not appear to allow for any expansion of cane in the Right Bank Canal areas, which, though

not suitable for sugar factories, may well be adapted for cane under the ordinary irrigation system. Of this latter there are already about 1,000 acres. For the purpose of this report we have therefore conservatively taken 15,000 acres as being the area possible for development for sugar factories.

Size of factories and estates.

21. Factories are generally described as being of so many tons capacity. This refers to the daily cane crushing capacity of the plant, and a 400 ton factory would be one in which 400 tons of cane could be crushed on each working day.

22. Now to crush 400 tons of cane daily throughout a working season of some 180 days, the land producing 35 to 36 tons of cane per acre, about 2,000 acres of land under cane would be required. Under the system of irrigation practised, cane is grown on the same land once in three years, hence the total area of land suitable for cane would have to be 6,000 acres. In addition to this, land for the factory itself, offices, quarters, roads, etc., would also be needed.

23. To go further, one acre of land producing 35 to 36 tons of cane with a recovery of 11 per cent. will yield roughly 4 tons of sugar, and hence a 400 ton factory would produce some 8,000 tons of sugar in a working season.

Weight of goods to be transported.

24. But there are also other goods to be reckoned upon in any calculations regarding transport. From figures kindly supplied to us by the Belapur Company Limited, a 400 ton factory cultivating 2,000 acres of its own cane each year would have to deal with :—

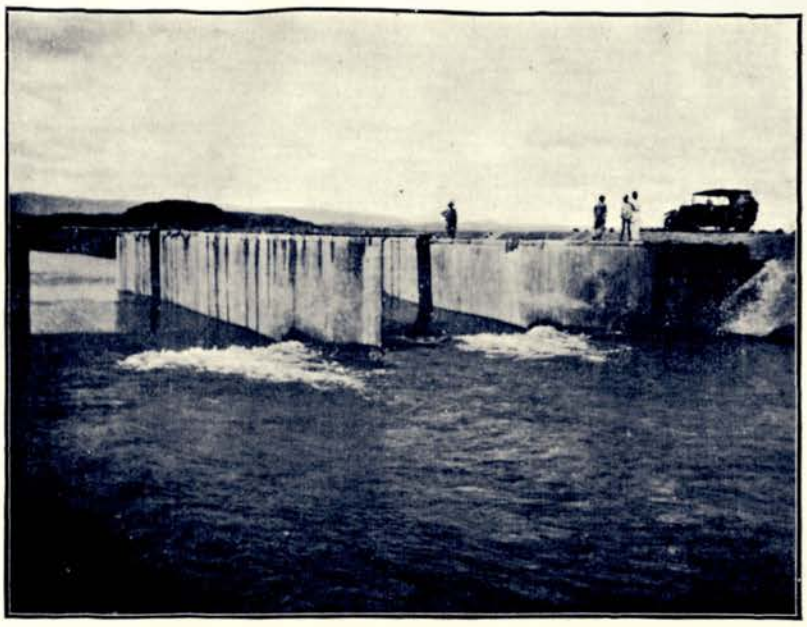
		Tons.	Tons.
Exports	Sugar	8,000	
	Molasses	2,500	
			10,500
Imports	Manures	2,320	
	Fuel	800	
	Stores	300	
			3,420
	Total		13,920

Hence for 15,000 acres of cane belonging to various sugar companies, the tonnage that would have to be transported into or out of the area would amount to 104,400 tons per annum.

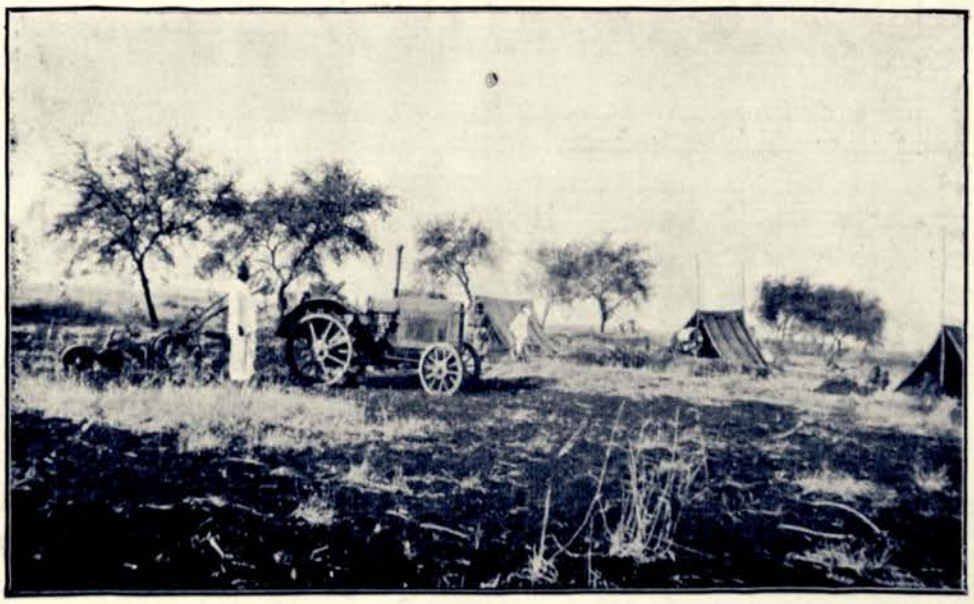
25. The above figures are, it is to be understood, based on an outturn of 35 to 36 tons of cane per acre, of which 11 per cent. would be the estimated recovery in the form of sugar. It is probable that some factories would not be content with 35 or 36 tons per acre, but would endeavour to harvest up to 45 tons. We therefore conclude that in respect of full development of the factory areas possible with the water available, 100,000 tons is not an over-estimate of the tonnage which would have to be handled in connection with those factories.

Situation of factories.

26. The 15,000 acres possible will not however all be centred near Akluj on Branch No. 1 of the Right Bank Canal, although this is the most suitable area (*vide* factory areas shown on Map No. 1). At the moment, one firm only has started operations with the approval of Government at Akluj, namely the Saswad Mali Sugar Factory Ltd. In Phaltan State, the Phaltan Sugar Works Ltd., has started and has already commenced the erection of a factory. We are informed that machinery for a factory near Lasurna (Left Bank Canal) has been ordered, but so far no official intimation has been notified. There are other suitable factory areas in Phaltan State and near Malsiras as well as in the Akluj area amounting to considerably more area than is possible with the water available. At least two other well known firms in Bombay have during our enquiry been making further investigations in the Nira Valley, and should communications be improved, these investigations would undoubtedly result in factories.



Standing Wave Flume for measuring discharge at the head of the Nira Right Bank Canal.



Tractor and Labour Camp of the Saswad Mali Sugar Factory at Akluj.

50 ton per acre crop of cane grown on reclaimed land at the Baramati Experimental Salt Area, Special Irrigation Division.

27. Of the 15,000 acres it may be assumed that Akluj will be the centre of 9,000 to 10,000 acres, and the number of factories possible would depend on their capacity. Assuming that they would all be 400-ton factories, four more factories could be erected at Akluj.

28. It must be noted that the number of factories cannot be given. The quantity of cane which can be irrigated with the water available can be given, also the number of possible sites. The actual number of factories is immaterial for our report, but the gross tonnage is important. For 10,000 acres of cane near Akluj, the tonnage to be handled would be 69,600 tons.

Value of Irrigation Research.

29. A matter we should like to emphasize is the immense amount of work which has been done, the cost of which is at present largely wasted due to lack of communications. As far as the dam, canals and distributaries are concerned, the cost of the project for the Lloyd Dam and the Nira Right Bank Canal was over 4 crores of rupees, and there is now the recurring cost of maintenance whether Government receives any revenue or not, and which at the moment is greater than the revenue.

30. But there is another branch of the work which, from the aspect of development, indicates the value of the policy which the Government of Bombay have adopted in order to promote orderly irrigation, to treat the irrigated areas like large estates so that both Government and the irrigators benefit, and to make the canals pay. We refer to the work of the Special Irrigation Division for the last 17 years and of the Irrigation Development and Research Circle since 1927.

31. The work of the Special Irrigation Division since its inception in 1916 has been to classify the soil, to carry out sub-soil surveys for the purpose of drainage, to standardize selection of soils for various crops (cane naturally being the most important) and generally to investigate certain problems on the borderline of agriculture and irrigation which had not been realised previously. To do this has entailed much research in hydrodynamics and soil physics for the efficient and economical design of masonry works, distribution of water, drainage and reclamation of waterlogged and salt affected lands, and a variety of other matters, all having some essential bearing on irrigation as a whole.

32. The practical results with which we are concerned are standardized plans of soil classification, soil and sub-soil conditions, and crop suitabilities ; and it can now be stated definitely that such and such an area is suitable for a factory. Actually such areas have been mapped out and particulars are available to anyone interested. They are also shown on the maps attached to this report.

33. It is desirable to make this even clearer. An area suitable for a sugar factory—6,000 acres at least for a factory capable of crushing 400 tons of cane daily—must comply with several conditions. The first is naturally the suitability of the soil—and for a factory large compact areas of suitable soils are necessary. This is seen from the soil classification.

34. Secondly, drainage feasibility is an essential. Where cane is to be grown in such concentration that the cane covers one third of a sugar factory estate it is absolutely essential that the sub-soil drainage of the area is satisfactory, otherwise trouble from waterlogging and salt efflorescence is certain. In other parts of the canal areas of the Deccan it has been found that for every acre of cane, up to two acres of land in the vicinity are likely to be damaged to some degree. This has occurred where no sugar factories exist, and where drainage has not been carried out, but in the ordinary development of cane irrigation—clearly such a state of affairs must not be allowed. It is now possible from soil and sub-soil surveys to state whether an area can be drained or not, to what degree drainage is feasible, and whether an area is suitable for a factory or for some less concentration that would not be economical for a sugar company.

35. The third consideration is distribution of water. It is desirable from a sugar company's point of view that the actual distribution of water from distributaries to the fields of cane should be controlled by the company and not by the canal staff as is the usual practice. To effect this it is necessary that a factory area should include all the land under the command of any one distributary or group of distributaries as far as possible, the canal staff's responsibility for distribution ending when water is let into the distributary from the main canal.

36. The last main consideration is the matter of getting the water to an area complying with the former conditions and is a technical matter concerning the capacity of the main canal and distributaries.

37. Finally we would again point out that the work entailed in this is the result of many years' research and investigation and that its value to Government and those who may wish to start sugar factories cannot be stated in a few paragraphs. We may also instance the case of the Belapur Company, the only successful sugar factory in the canal area of the Bombay Deccan, and point to the logical conclusion that with the knowledge of more recent years, the future factories proposed are, subject to efficient management, equally certain of success.

Need for communications.

38. This being so, the need for communications must be met. So far the Akluj area, where at least four large factories could be started, has been isolated. The roads are impassable for considerable periods during the monsoon. Although the Dhond-Baramati and Barsi Light Railways have prepared projects for extensions, none of these have materialized because the existing traffic was insufficient to make them pay. Because of the lack of communications, no sugar factories have been started until quite recently. It is however clear that with 15,000 acres for which water is available for cane for the manufacture of sugar, producing 60,000 tons of sugar, to which must be added another 40,000 tons of manures, molasses, gunny and other miscellaneous stores—not to mention the general increase of other goods and passenger traffic which would follow—some system of communications is essential for development of the area.

39. Details of quantities and transportation earnings from a 400-ton sugar factory are given in the part of this report dealing with the financial prospects of railway projects.

CHAPTER III.

Communications Existing and Demanded.

General.

40. The Nira Valley is (*vide* Map No. 1), compared with most areas, already fairly well served by road and rail. The shortcomings of the communications are two. Firstly, the railways existing do not pass *through* the area. The only one which touches any important centre is the Dhond-Baramati line serving part of the Nira Left Bank Canal area. Secondly, the roads are not all-weather roads. While they are generally adequate for the dry season, they are impassable for considerable periods during the monsoon, even in some cases where causeways have been provided. The roads therefore cannot be considered as providing satisfactory through communications throughout the year.

Railways.

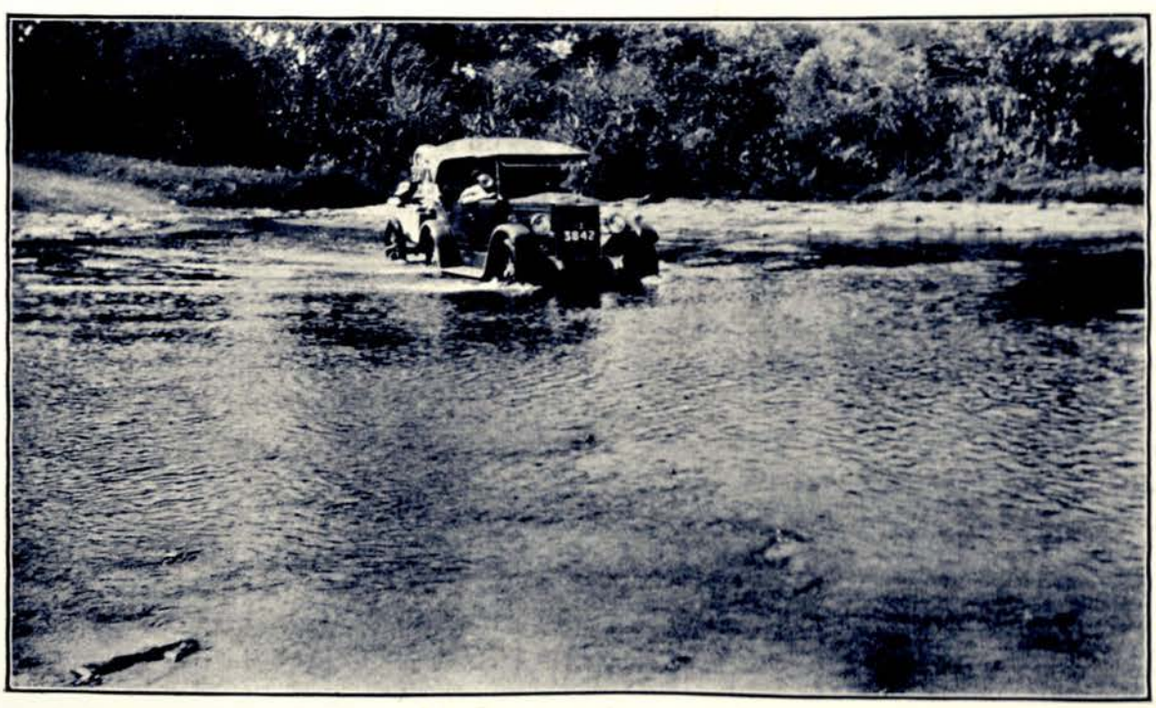
41. Four railways serve the Valley, the Great Indian Peninsular Railway, the Madras and Southern Mahratta Railway, the Barsi Light Railway, and the Dhond-Baramati Railway.

Great Indian Peninsular Railway.

42. This line does not traverse the valley anywhere, but runs parallel at a distance of fifteen to twenty miles. Its importance lies in the fact that Bombay, Khandesh, and the Nizam's Dominions are connected with the valley by road from various stations such as Poona, Dhond, Diksal, Pomalwadi, and Kurduwadi. This appears more clearly from an examination of the traffic returns of those stations, as also from the information we received regarding the movements of produce and general goods in the valley.

Madras and Southern Mahratta Railway.

43. This railway crosses the valley about 10 miles below the Vir pick-up weir. Its sphere of influence is somewhat limited and only extends into the irrigated areas to a distance of fifteen miles or so on each bank. It is probably most important as a link with Bombay and the south. Although there is a small



Nalas on the Mahad-Pandharpur Road.

market at Nira, most of the gul is sent to Baramati for wholesale disposal—as also practically the whole of the gul from Phaltan State—for export to Khandesh and the Nizam's Dominions. This also applies to cake manures in the reverse direction required for cane cultivation.

Barsi Light Railway.

44. The portion of this railway from Kurduwadi to Pandharpur might be exceedingly valuable to the whole of the lower reaches of the Right Bank Canal but for the fact that with transhipment essential at the former station, merchants prefer to send and fetch their goods by road from Diksal and Kurduwadi on the G. I. P. Ry. main line. Very little is imported into or exported from the perennial area of the Right Bank Canal by the Barsi Light Railway. From our enquiries, this line serves a limited area round Pandharpur, in fact the taluka of that name only. It is however of great importance at the time of the Pandharpur fairs, of which there are four each year at approximately three monthly intervals.

Dhond-Baramati Railway.

45. This connection with the G. I. P. Railway was completed in 1915 to deal with the merchandise required at and exported from Baramati, a town whose sphere of influence extends not only to the boundaries of the Bhimthadi taluka (of which it is the chief town), but across the river Nira to Phaltan. As such it should pay its way easily, but of recent years owing to the general depression and lowering of prices, it has lost a good deal of its traffic because a more direct and shorter route, and one which avoids transhipment at Dhond, exists in the road to Diksal (G. I. P. Ry.) a distance of 18 miles only. It is understood that the line, which is worked by the G. I. P. Ry. authorities on behalf of the Dhond-Baramati Railway Company does not pay the full 5 per cent. dividend guaranteed by Government. Whether or not concessional rates recently allowed for various materials will prove to be the desired remedy remains to be seen.

Roads.

46. The following paragraphs briefly describe the chief roads in the Nira Valley. These roads have been coloured sepia on Map No. 1.

Old Poona-Satara Road.

47. This road crosses the valley at Nira, and being parallel to the railway and close to it for a considerable distance over hilly country, is of little advantage to the area, except as regards passenger traffic by motor 'bus. The chief use of this connection with Poona is that it is the shortest link with the canal areas, is quicker than the train (M. and S. M. Ry.), and hence is an advantage to those compelled to move by motor, both officials, merchants, irrigators, and others. But this road is not yet an all-weather road, for the Karha River at Saswad and several other nalas are not yet bridged.

Nira-Indapur Road.

48. Starting at Nira and passing through Vadgaon (Nimbalkar), Pandhara, Baramati, Sansar, Lasurna, (all within the perennial limit of the Nira Left Bank Canal) and Nimgaon (Ketki), this road is the vital link with the Dhond-Baramati Railway. The small nalas are all passable except for short periods throughout the monsoon. But it is impassable at Baramati (the river Karha) and Nimgaon (Ketki) for days on end due to lack of causeways.

Mahad-Pandharpur Road.

49. This road was famous in the old days as the trade route by which merchandise passed between the Deccan and the Konkan, Mahad being a large trading centre in the Konkan, with Pandharpur the other terminus. As far as the Nira Valley is concerned its usefulness commences above the town of Bhor, as the forests both above and below ghat provide a considerable business in teak wood and other forest produce. From Bhor the road passes through Shirwal, near the headworks of the two Canals at Vir, and so to Lonand on the Madras and

Southern Mahratta Railway. This section of the road is probably not so useful as it used to be. There is now direct communication by a fully bridged road from Bhor to Poona, 35 miles, and for many years bullock carts have conveyed merchandise direct to Poona rather than by the shorter road to the railway station at Lonand which entails transhipment at Poona.

50. From Lonand the road runs parallel to the Nira Right Bank Canal down to Malsiras but not within the irrigated areas for the whole distance. Its importance is mainly due to local traffic approaching Phaltan (the chief town of the Native State of that name), Nateputa, an important business centre, Malsiras, headquarters of that taluka, Akluj, another very important business centre but a few miles off the road, and so to Pandharpur. It affords postal communication by motor 'bus throughout its length.

51. In addition to the ordinary trade along this road there is a considerable traffic in connection with the fairs at Pandharpur which are held four times during each year. Pilgrims after visiting Pandharpur frequently use this road to extend their pilgrimage to Shingnapur, a famous temple near Nateputa, and then continue *via* Lonand and Poona to Alandi on the river Indrayani.

52. The section of the road from mile 110 to 130 passes through the most suitable areas for sugar factories of which five or six 400-ton plants could be installed, each such plant requiring at least 6,000 acres to form a factory estate. The commercial centre of this area will certainly be Akluj.

53. As regards the condition of the road, the portion from Shirwal to Lonand is not in good condition, but causeways are being built gradually as funds permit. From Lonand to Dharampuri, during the construction of the canal, the nalas have been bridged completely and except for short periods the causeways provided are sufficient for present day traffic. From Dharampuri to Pandharpur a certain amount of work has been done in providing causeways over the hitherto unbridged nalas, but unfortunately the smallest nalas have been tackled first and several large nalas are still impassable for most of the rainy season. The most important of these are at Dharampuri, Nateputa (2 nalas), Mandva, Purandwada, Khudus, Velapur, Tondla Bondla, Shegaon, and Vakhri.

54. For the portion of the road in the Sholapur District, that is from Mile 98 (Dharampuri) to mile 147 (Pandharpur), an estimate has been sanctioned by Government, *vide* Government Resolution No. 438/27, dated 21st July 1930, amounting to Rs. 4,97,000 of which some Rs. 4,43,000 are for masonry works across nalas, the remainder being for improvements to the road surface, realignment, and other miscellaneous items. If the road is to be made passable throughout the year, by which is meant for bullock carts and light motors including motor 'buses, then these works must be carried out in the ordinary course. Whether provision should be made for a certain amount of heavier traffic in connection with the sugar factories which may be started is discussed in paragraph 169 below.

Poona-Sholapur Road.

55. This Class I provincial road providing communication from Bombay to Hyderabad (Deccan) is of importance in some sections to the Nira Valley although not actually within the area. It runs parallel to the main G. I. P. Ry. and for certain lengths is used extensively by cart traffic approaching the broad gauge railway line direct from the areas under command of the canal. The roads carrying this traffic run mainly at right angles to the Nira Valley and the railway, and are noted below.

Phaltan-Baramati Road.

56. Starting at the head of the valley the first road of importance is the connection from Phaltan to Baramati. From Phaltan to the Nira river it is bad, but being gradually improved by the State. The Nira river at Sangvi can be forded in the dry season. From Sangvi to Baramati is gradually being metalled throughout its length. The condition of this 8 miles however is not at all good because it not only carries a very considerable traffic from Phaltan but also traverses an area with the highest concentration of cane on the Nira Left Bank Canal. This road will be an important feeder to the Dhond-Baramati Railway and its completion forms part of our recommendations.

The main road in Baramati across the river Karha.

Ruts on the Baramati-Diksal Road.

Vakhri Nala.

Tondla Bondla Nala.

Baramati-Diksal Road.

57. This road was the original link from the Poona-Sholapur road to Baramati and is a continuation of the previous one. In recent years a large proportion of traffic has been diverted from the Dhond-Baramati Railway to this road. Carts carrying produce like gul to Diksal are always able to obtain a return load of goods imported such as manure in the form of castor cake, groundnut cake etc. which comes largely from areas beyond Sholapur by rail. The general condition of the road is bad, its repair grant being Rs. 223 per mile per annum only, and several nalas require bridging.

Akluj-Indapur-Diksal Road.

58. There is a concentrated area of 700 acres of cane round Bauda irrigated from Shetphal Tank. The gul produced is conveyed to Akluj and from there again distributed generally to the east. In addition to this all imports to Akluj from Bombay and the north are unloaded at Diksal and transported by cart, a distance of some 37 miles. The portion from Diksal to Indapur, 22 miles, which forms a section of the Poona-Sholapur road is good. The portion from Indapur to Sarati on the banks of the river Nira is nearly as good. The river Nira is not bridged at Sarati and is impassable during the monsoon except by means of a ferry boat. It can be forded in the fair season. No metalled road exists from Sarati to Akluj.

Malsiras-Akluj-Kurduwadi Road.

59. This is a Local Board road and provides a very important means of exporting and importing the Akluj merchandise *via* Kurduwadi on the G. I. P. Railway. It crosses the river Bhima just below the confluence of that river with the river Nira and is impassable during the monsoon as there is no causeway. It is used for the export of goods to Kurduwadi where the broad gauge is available for long distance goods, but carts are utilized to go even further to Barsi and Latur. Another trade route from Akluj branches off at Temburni on the same road for Jeur and Karmala. Carts carrying produce to Kurduwadi can invariably obtain return loads of goods imported by Akluj merchants.

Akluj-Sangola Road.

60. The produce of Akluj is also distributed for local consumption by bullock carts to Sholapur, Mangalvedha and villages throughout the Pandharpur Taluka. Hence it is important to mention the Akluj-Velapur-Mohod-Sangola road. It is merely a murum road of which the state may be judged by the Rs. 167 per annum allowed for its maintenance.

Other roads.

61. We found during our tour of the area that a considerable trade finds its way along what are merely cart tracks or very little better in several portions of the area. For instance produce is transported from the upper reaches of the Nira Left Bank Canal crossing the river Nira at Kambleshwar or Sangvi to Nateputa. There is also a Local Board road from Baramati to Songaon near where the river Nira can be forded giving access to Asu and further to Nateputa and Dharampuri. We also found that Nimgaon (Ketki), a small but wealthy town some 8 miles from Indapur towards Baramati, has direct communication with the G. I. P. Railway at Diksal across country. It may also be mentioned that a certain amount of traffic from Satara District comes to Phaltan and to Nateputa by similar minor roads.

Road improvements under consideration.

62. For the roads briefly described above certain projects have long been contemplated. One of the most important is undoubtedly the causeway across the river Karha in Baramati, a work which is included among our recommendations. It is at this point the railway is cut off from the whole of the upper reaches of the

Nira Left Bank Canal for a large part of the monsoon and the building of a causeway would undoubtedly benefit the railway.

Another work which has been proposed is in connection with the development of sugarcane around Akluj, namely the provision of a bridge across the river Nira at Sarati (*not* included in our recommendations). Eight years ago rough estimates for the following alternatives were worked out :—

(1) A combined road and railway bridge (on the presumption that the Dhond-Baramati Railway might be extended to Akluj) costing Rs. 1,99,000.

(2) A high level road bridge costing Rs. 1,60,000 ; and

(3) A submersible bridge or high level causeway costing Rs. 1,40,000.

A project for the improvement of the Mahad-Pandharpur road in the Sholapur District has been administratively sanctioned for Rs. 4,97,000. Most of the large items under this project have also been sanctioned technically but not started for want of funds.

Demand for communications.

63. As a result of our enquiries, we have received a universal demand for a railway and also suggestions amounting to a demand for general improvement of the roads, both for through and local traffic.

Broad Gauge.

64. As to railways the chief demand was for a broad gauge line connecting the valley with Diksal or Kurduwadi, the reason being that there is a decided prejudice against transhipment of goods which at present is necessary at those two stations. Unfortunately the running expenses on a broad gauge line are so much greater than on a narrow gauge railway that the former is out of the question.

Transhipment.

65. The prejudice against transhipment necessitated by change of gauge at certain railway stations arises, we are informed, not so much from the extra expense entailed which, equivalent to but six miles extra carriage by rail, is infinitesimal for long distance traffic, but rather on account of the damage, loss, and delay said to be caused. To quote one instance given us, it was stated that a Bombay merchant found it better to import cigarettes from Calcutta rather than from Bangalore, the latter requiring transhipment from the metre gauge to broad gauge at Poona. On the other hand it should be realized that the various railway authorities are fully alive to the position and that remedial measures are being taken.

Narrow Gauge.

66. The proposals which have already been made in the past for extensions of the narrow gauge railways were all supported, namely, the Pandharpur-Lonand extension of the Barsi Light Railway and the Baramati-Akluj extension of the Dhond-Baramati Railway. The proposal for an entension from Baramati to Phaltan also had considerable support. They were however mostly put up with an idea of benefit for the individual questioned rather than for the valley as a whole. In general the suggestions for a narrow gauge railway may be condensed into a demand for the Pandharpur-Lonand extension and also a connection from Baramati across the river Nira to this extension.

Inadequacy of roads.

67. The complaint, for it was a complaint rather than a demand, regarding roads is against the inadequacy of the bridges and causeways in general—and it is a fact that certain roads are impassable for days on end during the monsoon.

Sarati Bridge.

68. The demand was general for a bridge over the river Nira at Sarati so as to afford direct communication between Pandharpur, Akluj and Diksal or even Poona. In this case however it has to be borne in mind that any through road to Diksal would possibly affect a railway passing Akluj wherever it went, and that such a road would be in direct competition with the railway.

Sangvi Bridge.

69. It is stated elsewhere that a considerable trade is carried on between Vadgaon (Nimbalkar) and its neighbourhood and Phaltan, Dharampuri and Nateputa; also direct between Baramati and Phaltan; and again between Baramati and Nateputa. Although no definite place was indicated as being most desirable for a bridge, there is undoubtedly the need for one somewhere in this reach of the river.

CHAPTER IV.

Investigation of Expenditure to Provide Adequate Communications by Road.

70. A completely bridged system of roads is the only practical alternative to a railway. In this area sufficient main roads already exist, but, with the possible exception of parts of the Poona-Sholapur road, none of them are fit to withstand heavy traffic. To compare the two systems, it is therefore necessary to consider improvements to the road system, the capital outlay needed to strengthen certain roads for heavier traffic, and the annual cost of maintenance in the future. These factors are discussed in the following paragraphs.

Roads needed.

71. For this purpose road facilities for incoming and outgoing merchandise equivalent to that of a railway would have to be provided and on that basis the following roads would require immediate capital outlay :—

(*a*) *Akluj–Velapur–Pandharpur.*—This would afford connection with the Barsi Light Railway at Pandharpur for the south and south-east, 28 miles.

(*b*) *Akluj–Sarati–Indapur–Diksal.*—This would connect with the G. I. P. Railway at Diksal for the north and west, 37 miles.

(*c*) *Phaltan–Sangvi–Baramati.*—This connection with the Dhond–Baramati Railway is essential to cope with the demand for traffic facilities already existing, let alone for any factories that would be also benefited, 14 miles.

Traffic censuses.

72. In the table No. 1 on the following page, data for various mofussil roads and the traffic loads they carry have been shown in a convenient form for comparison. The figures have been calculated from traffic censuses observed by the Executive Engineers concerned during the last few years, chiefly in connection with the Road Board. Regular annual or biennial observations are not available, so it is impossible to know whether traffic has or has not increased. Judging from the increase in the number of motor lorries now on the roads, and from the population figures of the Indapur, Bhimthadi, Malsiras and Pandharpur talukas, which in all cases have shown increases, it is reasonable to suppose that traffic is also becoming greater year by year.

TABLE I.

Intensity of traffic loads on roads taken from census returns including weight of vehicles.

	Road	Total tons per day	Tons per yard surfaced width	Tons per foot surfaced width	
December 1931 ..	Nasik Station road average of four days ..	1,494	280	93	asphalt
		485	91	30	macadam
		1,979	186	62	combined average.
September 1926..	Poona-Sholapur road up to Kachra depôt ..	874	165	55	
Do. ..	Do. do. near Hadapsar ..	646	121	40	
Do. ..	Do. Diksal to Indapur	57	11	4	
Do. ..	Baramati-Diksal	106	27	9	
Do. ..	Indapur to Sarati	98	25	8	
March 1928 ..	Poona-Ahmednagar road in mile 3 near Jail road recently modernized ..	813	152	51	
Do. ..	Poona-Sholapur road (Poona-Hadapsar) fair at Saswad	1,664	312	104	
May 1927 ..	Poona-Bangalore (last week of Mahableshwar season), at Mile 10/7	762	144	48	
May 1928 ..	Poona-Bangalore near Sowar's gate, Poona—normal day in carting season	899	169	56	
	Mahâd-Pandharpur.				
July 1927 ..	Lonand-Phaltan	287	72	24	
	Phaltan-Dharampuri	238	60	20	
	Dharampuri-Velapur	168	42	14	
	Velapur-Pandharpur	202	51	17	
		414	104	34	
April 1927 ..	Nira-Baramati	493	92	31	
September 1931	Do.	232	44	15	
January 1932 ..	Do.	441	83	28	
April 1932 ..	Do.	186	35	12	
April 1927 ..	Baramati-Indapur	148	37	12	
September 1931	Do.	145	36	12	
January 1932 ..	Do.	119	30	10	

73. The Nasik Station Road carries by far the heaviest traffic, the maximum intensity on the modernized portion of its width being 93 tons per foot width of surface (tons/f.w.) per day. Within the last few years it has been resurfaced with various asphalts, cement macadam, and cement concrete. Though records have been kept of the wearing of the different surfaces, it is yet too early to state definitely which is the most economical. Just outside Poona, the Poona-Sholapur road carries 55 tons, the Poona-Bangalore road 56 tons, and the Poona-Ahmednagar road 51 tons/f.w. Of these a length of the Ahmednagar road near Poona has been surfaced with "creteway" and asphaltic grout very recently. No other roads have such heavy traffic, although the condition of some of them point to the need for modernization.

Traffic expected from sugar manufacture.

74. On the roads mentioned in paragraph 71 above, which are considered essential for development of the Nira Valley, the traffic is at present only medium or light, and except for the Diksal-Indapur section, they are II or III class roads. It has been shown elsewhere that the total traffic expected for 15,000 acres of cane for which water is available for factories would be 104,000 tons annually, an average of 285 tons daily. It is assumed that of this amount half would be on the Diksal road and half on the Pandharpur road; and again, that half would be by bullock cart and half by motor lorry. An allowance for the weight of the vehicles has been added to compare with the figures given in the statement—33 per cent. for that carried by cart, and 100 per cent. in the case of motors. Cart traffic will then be 96 tons and motor traffic 143 tons daily on each road.

Need for modernization.

75. It follows that the Indapur-Sarati section would have to carry 28 tons f.w., the Diksal-Indapur section 19 tons/f.w., and the Velapur-Pandharpur portion 46 tons/f.w., daily. This last figure is obtained from the mean of those

given in the statement because the two sets shown refer to censuses taken at the time near Velapur and near Pandharpur, and allow for traffic joining the road between the two places. It would not therefore be justifiable on these figures to provide an asphaltic surface to any of these roads. There is however the increase of traffic due to the general increased prosperity of the tract resulting from development of communications to be considered. This cannot easily be determined, but may be very considerable and would at some future date almost certainly make modernization of some roads imperative. We have accordingly provided for the asphalting of the Akluj-Diksal and Akluj-Pandharpur roads, as they would ultimately bear the brunt of the traffic.

Traffic lanes.

76. Much of the roadway estimated consists of 12 feet of metal width only. It is considered that this should be increased to 16 feet width and the estimates include this. For the asphaltic portion, a centre lane of asphalt would hardly be feasible where the traffic did not justify a greater width than 16 feet. Moreover from the experience at Nasik, such centre length of asphalt must be protected at the junction between asphalt and ordinary water bound macadam by means of kerbing—an additional expense, the justification for which is perhaps open to doubt. The asphaltic surface has therefore been allowed for the full 16 feet width.

Type of asphaltic surface adopted.

77. On the results of the experimental surfaces on the Nasik Station road, the Chief Engineer, Roads and Buildings, Bombay, has remarked that the best results are given by :

(1) Socony No. 101-E with seal coat.
(2) Socony No. 104 with seal coat.
(3) Trinimac with seal coat.
(4) Cement concrete.

The cost of such surfacing exclusive of the preliminary conditioning of the sub-grade was Rs. 2-2-9, Rs. 2-11-0, Rs. 3-9-3 and Rs. 5-5-0 per square yard respectively. Cheaper forms of treatment were tried costing about Rs. 1-9-0 per square yard but were not satisfactory. We are advised as regards the type of surface to be adopted that a pre-mix type is far preferable to any form of asphalt grouting, and that in long lengths it should cost very little more. For these estimates we have therefore adopted a rate of Rs. 3 per square yard for some form of asphalt pre-mixed surface. This in round figures for a mile of roadway 16 feet wide comes to nearly Rs. 30,000.

78. It may be, and has in fact been, suggested that after completely reconditioning the roads throughout, the traffic intensities should be watched carefully before embarking on further expenditure in the shape of modernization. With this we agree entirely, but we do not consider these estimates would be complete without some indication of the cost of modernizing, especially as they are mainly meant for comparison of costs between road and rail transport.

Rates.

79. The rate for metalling is given in detail below, and comes to Rs. 3,250 per mile for 3" metal and 16 feet width of surface. Items marked (Z) have been taken from the Priority List of Communication Works (October 1932) direct. Items marked (X) are taken from the estimate sanctioned by the Government of Bombay in G. R., P. W. D., No. 438/27 dated 21st July 1930. 25 per cent. is added to all items of cross drainage works to allow for extra expenditure thereon to pass traffic throughout the monsoon.

Metalling 1 *mile of road* 16 *feet width* 3″ *thickness.*

	Rs.
5,280′ × 16′ × 3″ = 21,120 cubic feet.	
21,120 cubic feet metal on quarry at Rs. 7	1,478
21,120 cubic feet metal, average lead 2½ miles at Rs. 3 ..	633
21,120 cubic feet metal spreading at Rs. 0-6-0 ..	73
1 mile rolling with steam roller and artificial watering at Rs. 580	580
10,560 cubic feet collecting muram for side widths 4 feet width 3″ thick at Rs. 2-8-0	264
10,560 cubic feet spreading muram for side widths 4 feet width 3″ thick at Re. 0-6-0	40
10,560 cubic feet consolidating muram at Rs. 80 ..	80
3,520 cubic feet blindage including spreading at Rs. 3 ..	105
	3,253
Say Rs.	3,250

80. The following estimates for the roads mentioned in paragraph 71 above are given below :—

I. Sarati Bridge over the river Nira.
II. Road from Sarati to Akluj.
III. Road from Akluj to Velapur.
IV. Road from Velapur to Pandharpur.
V. Road from Sarati to Indapur.
VI. Road from Indapur to Diksal.
VII. Road from Phaltan to river Nira.
VIII. Bridge at Sangvi over the river Nira.
IX. Road from Sangvi to Baramati.

I. *Bridge at Sarati over the river Nira—*

	Rs.
(Z) *Vide* Priority List of Communication Works ..	2,00,000

II. *Road from Sarati to Akluj, 2 miles—*

	Rs.
Cross drainage works (X)	9,648
Add 25 per cent. on above	2,412
Earthwork, metalling etc. (X)	9,865
Land acquisition (X)	2,927
Asphalting surface at Rs. 30,000 per mile	60,000
Total ..	84,852
Cost per mile ..	42,426

III. *Road from Akluj to Velapur, 7 miles—*

	Rs.
Cross drainage works (X)	33,663
Add 25 per cent. to above	8,416
Earthwork, metalling etc. (X)	54,366
Land acquisition (X)	10,553
Modernizing surface at Rs. 30,000 per mile	2,10,000
Total ..	3,16,998
Cost per mile ..	45,285

IV. *Road from Velapur to Pandharpur, 21 miles—*

	Rs.
Cross drainage works (X)	2,14,235
Add 25 per cent. on above	53,559
Improvements, alignment etc. (X)	6,420
Raising low portion in m. 134 (X)	3,003
Other items (X)	7,500
Modernizing surface at Rs. 30,000 per mile	6,30,000
Total ..	9,14,717
Cost per mile ..	43,558

V. *Road from Sarati to Indapur, 15 miles—*

	Rs.
Cross drainage works—lump	50,000
Modernizing surface at Rs. 30,000 per mile	4,50,000
Total ..	5,00,000
Cost per mile ..	33,353

VI. *Road from Indapur to Diksal, 22 miles—*

	Rs.
Modernizing surface at Rs. 30,000 per mile	6,60,000

VII. *Road from Phaltan to Sangvi, 6 miles—*

	Rs.
Constructing road complete with 16 feet width of metalled surface and bridges	1,50,000

Note.—The existing road is little superior to a muram cart track, hence a rate of Rs. 25,000 per mile is allowed.

VIII. *Bridge at Sangvi over the river Nira.*

	Rs.
Vide Priority List (Z)	2,00,000

IX. *Road from Sangvi to Baramati, 8 miles—*

	Rs.
Cross drainage works (Z)	1,00,000
Add 25 per cent. to above	25,000
Remetalling at Rs. 3,250 per mile	26,000
Total ..	1,51,000
Cost per mile ..	18,875

The total cost of works then comes to :—

	Rs.
Item I	2,00,000
„ II	84,852
„ III	3,16,998
„ IV	9,14,717
„ V	5,00,000
„ VI	6,60,000
„ VII	1,50,000
„ VIII	2,00,000
„ IX	1,51,000
	31,77,567

Say Rs. 32 lakhs.

Factors omitted.

81. There are one or two important points which have not been considered in these estimates. We have not considered road traffic outside the valley except that up the nearest railway. But if road transport were to be encouraged and no railway constructed, it is quite certain that the transport would not merely stop at the railway, but in a large proportion of the journeys, would travel to much greater distances. For instance, sugar would be loaded up at (say) Akluj and delivered at godowns in Poona, Sholapur, Miraj, Hyderabad, Satara, certainly distances up to 150 miles, if not more. The effect of this obvious fact is a further disadvantage in roads, for the cost of maintenance would have to be increased to cope with it. At the present stage it is impossible to state the financial effect in rupees, and it is therefore pointed out as a factor which has not been included in the estimates. The above estimate of Rs. 31,77,567 should be understood to provide the minimum requirement as an alternative to a railway. Other roads such as the Malsiras–Akluj–Sangam road (21 miles) would almost certainly require considerable improvements, which would raise the above total of Rs. 31,77,567 to approximately Rs. 35 lakhs.

82. Another point not touched upon is that of establishment. To carry out this programme of road work in three years as suggested in paragraph 84 below would necessitate three special sub-divisions for the purpose, and possibly a temporary division to unify control. This has not been included in the estimates.

Road loan.

83. The point now arises as to whether this outlay should be considered as being part of the programme already planned by the Bombay Government or as due to the development of the Nira Valley. It is true that much of the work has been foreseen according to the Priority List of Communication Works and has been estimated, but the probability of so much expenditure being incurred in the immediate future as opposed to the ordinary course of annual expenditure on roads is exceedingly remote, for most of it concerns second and third class roads not high up in the Priority List.

84. Now to ensure development of communications adequate for sugar factory operations requires a programme of road work which could be completed in the same time as would a railway affording similar communications. The railway actually recommended by us is estimated to require 2½ 3 years for construction. To complete the roads within this period and a special sub-division for each of the three roads is indicated precludes any question of the work being financed from funds granted in the ordinary way. For the purpose of the comparison, it is therefore assumed that the Government of Bombay would have to borrow the amount required for this special purpose of development, just as money would have to be raised for the construction of a railway.

Recurring expenditure.

85. The first item of recurring expenditure would be the interest on a loan for the capital outlay, and at 4 per cent. on Rs. 32 lakhs would amount to Rs. 1,28,000 per annum.

Road repairs.

86. The second item would be the cost of maintaining those roads. The aim of the department used to be to remetal a road once in five or six years or in other words to allocate 65 per cent. of the maintenance grant for resurfacing, subject of course to the amount of traffic on the particular road. It is calculated however that if a road requires remetalling more than once in three years, it pays to construct a modernized surface of asphalt or concrete. On the three main roads just outside Poona, maintenance now costs Rs. 1,269 per mile per annum, and as already mentioned, a length on the Ahmednagar road has just been modernized. From the proceedings of the Road Board (1932) the cost of annual repairs to asphaltic surfaces varies from annas 1½ to annas 2 per square yard. The former rate is adopted here, as prices have come down somewhat. Annas 1½ per square yard for a 16 feet wide surface is the equivalent of Rs. 880—say Rs. 900 per mile per annum.

87. Table No. II given below shows the present cost of maintenance, that considered necessary *under present conditions* by the Central Division Road Committee, and the amount recommended as necessary for the development of the area for this purpose of comparison.

TABLE II.

Section of road	Length Miles	Cost of repairs per mile			Extra cost per annum of road maintenance
		At present	Proposed by the Divisional Committee	Now proposed	
		Rs.	Rs.	Rs.	Rs.
Diksal to Indapur	22	227	500	900	14,806
Indapur to Akluj	17	200	200	900	11,900
Akluj to Velapur	7	167	200	900	5,131
Velapur to Pandharpur ..	21	298	500	900	12,642
Phaltan to Sangvi	6	....	....	500	3,000
Sangvi to Baramati	8	355	500	500	1,160
Total increase ..	....	....	....	....	48,639

Say Rs. 49,000 per annum.

88. The total additional cost to Government would then be made up as follows :—

	Rs.
4 per cent. on capital outlay on roads	1,28,000
Annual repairs from table II	49,000
Annual Total ..	1,77,000

Sugar tax.

89. It is very unlikely that Government could afford to incur this recurring liability without any return. It may be assumed therefore that such road transport as might be used in connection with the manufacture of sugar should be taxed in some way or other. On 104,000 tons, the quantity on which we have based our calculations, the rate would be Rs. 1·70 per ton. It would however be better to tax the sugar produced, 60,000 tons, and the rate would then be Rs. 2·95 per ton. This tax would ultimately be borne by the consumer.

Cost to the consumer.

90. Assuming a 30 cwt. motor lorry to cost annas 5 per mile to run (Mitchell-Kirkness Report), the cost of transport from Akluj to Pandharpur (28 miles) would be Rs. 5·83 per ton. If carts be used at 1 pie per maund per mile (the lowest rate practicable, *vide* paragraph 103 below), the cost would be Rs. 3·01 per ton. To these would be added the sugar tax of Rs. 2·95 per ton. Compared with the above rates for transport by road, the goods rate for sugar by rail is 0·42 pies per maund per mile and hence for the 28 miles to the railway, the rate would be Rs. 1·72 per ton. It may be argued that the sugar alone should not be taxed, but all other goods also. There is little need however to go into this, for even after making allowances for the possibility of some indirect revenue from the import duties in the case of motor transport, it is already apparent that the consumer would pay more per ton for his sugar carried by road than by rail. This in itself would be a deterrent factor to the development desired, and favours the construction of a railway.

91. In conclusion, the Government of Bombay would be involved in at least Rs. 1,77,000 per annum for road transport in this area. The figure given does not include any sinking fund for the repayment of the loan, no allowance for additional maintenance charges on roads outside the area, and no extra establishment either for construction or for the subsequent maintenance. It is not difficult to envisage the total cost to Government being in the neighbourhood of Rs. 2,00,000 per annum.

CHAPTER V.

The Railway Aspect of the Problem. Projects investigated and Factors taken into Consideration.

General.

92. A general description of the existing railways of the area has been given in Chapter III and it has been mentioned that, with one exception (the Dhond-Baramati), these railways surround but do not penetrate the area. In Chapter IV the needs of the area as regards road as an alternative to rail communications are dealt with. Map No. 2 (next page) shows existing and suggested railways.

Important trading centres in the area.

93. Of outstanding importance are the towns of Baramati, Diksal, Akluj and to a minor degree, Nateputa.

Baramati is the main distributing centre for the Nira Left Bank Canal area. It is connected by rail to Dhond by the Dhond-Baramati 2'-6" gauge railway which is subject to serious competition by cart both for exports and imports to and from Diksal. In spite of this competition the line is understood to earn over 4 per cent. dividend.

Diksal, owing to its position on the right bank of the Bhima river, is the station at which are received and despatched the principal imports for the lower half of the Nira Valley area. Its importance may be judged from the fact that its goods earnings amounted to Rs. 1,71,000 during the year 1932-33 and deflection of this trade from bullock carts to any of the proposed railway schemes has been one of the problems under investigation (for details see table No. IV, page 36).

Akluj is the principal marketing centre both for imports and exports on the right bank of the Nira river. The total trade of Akluj amounts to about 16,000 tons per annum. It is also the centre of the greatest concentration of sugar factory areas. Any railway project which does not pass through Akluj would not meet the transport development requirements of the area. Akluj is connected to Diksal, Kurduwadi, Lonand and Pandharpur by metalled roads. The two more important of these cross the rivers Nira and Bhima by fords which are impassable (except by ferry) during the monsoon and are impassable to motors at all seasons.

Nateputa lies on a locally important north and south bound trade route, traffic along which finds its way across fords of the Nira to and from Baramati and Diksal. The recommended project will give improved access for this traffic from the Dahivadi area to northward markets both for imports and exports.

94. Railway projects of which the financial prospects have been investigated are as follows :

Serial No.	Name of project	Gauge	Length in miles.
1	Baramati–Baura (Bauda) *via* Indapur	2′ 6″	42
2	Baramati–Baura *via* Shetphal	2′ 6″	36
3	Baramati–Baura–Akluj–Pandharpur *via* Left Bank	2′ 6″	70
4	Akluj–Pandharpur	2′ 6″	28
5	Pandharpur–Lonand *via* Akluj	2′ 6″	86
6	Baramati–Nateputa–Akluj–Pandharpur *via* Right Bank	2′ 6″	70
7	Kurduwadi–Akluj–Gunawra	5′ 6″	64
8	Kurduwadi–Akluj–Nateputa–Baramati–Dhond	5′ 6″	101
9	Akluj–Diksal	5′ 6″	36
10	Kurduwadi–Lonand	5′ 6″	86

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MAP No 2
SCALE 8 MILES = 1"
N
REFERENCES
CANAL
RAILWAY LINE
METALLED ROADS
RIVER
FACTORY AREA
2-6" GAUGE RAILWAY AS PER 1921 1925 1928 PROJECT
REALIGNMENT OF RAILWAYS TO MEET PRESENT CONDITION OF TRADE & DEVELOPMENT
FURTHER RAILWAY PROJECT INVESTIGATED BY THE NIRA VALLY COMMUNICATIONS COMMITTEE 1934.
(a) 2-6" GAUGE
(b) 5-6" GAUGE
POONA
LLOYD DAM
BHATGAR
SABVAD
RAJEVADI
JEJURI
WALHE
LONAND
SALPA
WATAR
SATARA ROAD
SATARA
KOREGAON
NHER TANK
DAHIVADI
PINGLI TANK
WADUJ
MHASVAD
MHASVAD TANK
PANDHARPUR
MANGALVEDHE
SHOLAPUR
KUTGI TANK
KUTGI
ERRUK TANK
MOHOL
ASHTI TANK
SHETPHAL
MADHE
KURDUWADI
TEMBURNI
INDAPUR
BARSI
JEUR
KEM
KARMALE
MANGI TANK
KARJAT
BHIRIGONDE
DHOND
PATAS
VARVANDI TANK
SUPE
JEJURI
SURSUPRAL TANK
BHADALWADI TANK
SHETPHAL TANK
(BAUDA)
SARATE
AKLUJ
MALSIRAS
KATAPUTA
VELAPUR
MAHABALESHWAR
WAI
FROM KARAD
FROM MIRAJ
FROM TASGAON
FROM PUSESAULI
FROM MAYANI
FROM SANGOLA
FROM MIRAJ
FROM SANGOLA
FROM BIJAPUR
FROM BIJAPUR
TO KALM
TO LATUR
TO SHIR
TO NAGAR
TO NAGAR
TO MANMAD
TO NAGAR
TO NAGAR
TO SHIRUR
TO SHIRUR
TO KHED
TO NALDURG
TO HYDERABAD
TO RULBARGA
TO MADRAS
TULJAPUR
KHANDGAON
JAMKHED
RIVER
MAN RIVER
BHIMA RIVER
NIRA RIVER
KRISHNA RIVER
LAKE VIEW
LAKE WHITING
LAKE FIFE
K.L.B. CANAL
URULI
VEWAR
KEDGAON
PATAS
BORIBYA
DINDALI
KATRAJ
POMALVADI
BOGAON
SANGVI
PHALTAN
SALPA
WATAR
KARMPURI
KATAPUTA
MALSIRAS
VIR
NIRA
LAKE
BAHAMANI
NIMGAON (KETHI)
MADHE
ANGAR
PANDI
MANGALVEDHE

Method of investigating suggested projects.

95. In the two months (extended to 2½ months) allotted to this enquiry it has been impracticable (and unnecessary) to make detailed traffic and engineering surveys of every one of these ten projects. Data in the form of traffic surveys for Project Nos. 1 and 5 and a manuscript engineering estimate for No. 4 exist. These three projects have been revised in the light of the changed situation caused by 'bus, lorry, and cart competition on the metalled (but unbridged) roads which lie parallel or near every one of the proposed new lines. From these revisions basic data applicable in varying degrees to all the ten projects have been obtained and amplified by allowance for earnings due to sugar factories. From these data the financial prospects have been calculated and on the results of these calculations and corresponding calculations of road costs our recommendations are based. If or when the desirability of building one of these branch lines be agreed upon, a more detailed engineering and traffic survey for that particular project should be made.

Meter gauge alternatives.

96. It will be noted that no meter gauge alternative has been investigated, the reason being that the adoption of meter gauge would lengthen the route to northern outlets compared with a "*via* Dhond" route, while the outlet to markets on the G. I. P., M. & S. M. and Nizam's Railways *via* Kurduwadi could only be obtained by either by a line competing with the Barsi Light Railway or by double transhipment if *via* Pandharpur. Also, a meter gauge line would not (without double transhipment) meet the needs of the ordinary trade of the district for a connection from Nateputa to Baramati.

—

CHAPTER VI.

Transportation Value of Sugar Factories.

Length of haul on proposed lines.

97. In Chapter II a general description has been given of the policy and prospects of the Nira Valley sugar manufacturing industry. On Maps 1, 2 and 4 the areas set aside by the Irrigation Department for sugar factory areas are shown. As the extent of suitable areas largely exceeds the 45,000 acres (15,000 acres under cane at any one time) for which storage water is available, it is not possible to say exactly which estates will be taken up or to calculate exactly the length of haul on proposed lines.

Markets, distances and profits of sugar transportation.

98. Map No. 3 shows the actual quantities (tons) and distances from Belapur of sugar sold per annum by the Belapur factory and the table below No. III gives the actual haulage charges on corresponding weighted average distances from the Akluj area. The markets for sugar are likely to change from time to time and it is therefore most important that an easy outlet should be provided in all directions. The recommended line meets this condition.

The average quantity of sugar imported into India for the years 1928–32 was approximately one million tons per annum of which about one-fifth is consumed in the area which (see Map No. 3 next page) will be served by the Nira Valley factories.

In view of these figures there is little cause for anxiety on the score of markets.

Some decline may eventually come about due to over production but against this may be set the increased consumption per head of population and, so far as railway earnings are concerned, the fact that no credit whatever has been allowed in projects investigated below for haulage of Nira Valley sugar over *existing* lines on the principle that the railways already gain this haulage from Bombay. The amount of gross earnings per annum foregone under this head (as obtainable from column 8 of the table No. III below) is Rs. 4,64,000.

The traffic in manures, etc., is new production and full credit (less working expenses) has been allowed to railways for this transportation.

Graph No. 1 gives a general idea of the state of the Indian sugar industry. It is seen that production has reached the enormous total of 4,651,000 tons per annum thus making India the greatest sugar producing country in the world. Included in this total are 586,000 tons estimated by the Sugar Technologist to the Imperial Council of Agricultural Research as the 1933–34 production of factory sugar in India. "Khandsari" sugar is the name given to semi-refined sugar produced in small mills employing open pan boiling and centrifugal machines driven by oil engines. For purposes of computing the date by which indigenous production of factory sugar will meet the full demands of the country, Khandsari sugar has not been taken into account, on an assumption that this sugar will replace consumption of gul.

It is seen from the graph that expansion of the Indian factory sugar industry may be expected to continue until about the year 1938–39. These figures are very approximate and the conclusions drawn from them should be treated with reserve. In this connection the following paragraph (for which we are indebted to a well produced New York, U. S. A., periodical entitled "Facts about Sugar") may be quoted as summarizing the position :

> "Much, however, depends upon how long the combination of special conditions that has favoured the present rapid expansion continues to obtain. Among these conditions are the low price of land and material, the low price of machinery and the low price of cane, together with the fact that under present agrarian conditions sugarcane is the only paying crop that agriculturists can grow. It is not to be expected that all these conditions, which are in fact the result of the general economic situation, will hold indefinitely."

Working Expenses on sugar and by-products.

99. For the purpose of estimating the transportation value of the sugar industry the following table No. III has been prepared to show the profit earning value of transport of the marketable proportion of the 60,000 tons per annum of sugar, 18,750 tons of molasses and 26,000 tons of manures, fuel, gunnies, etc. represented by 15,000 acres under cane.

The distances given in the table are "adjusted distances" as per tariff schedules in force and are based on actuals of the Belapur Factory. For example molasses are largely sent to Nasik for liquor distillation.

Before the profits of working can be calculated working expenses must be deducted. The 1931–32 operating ratios of lines over which the sugar traffic will pass are as follows :—

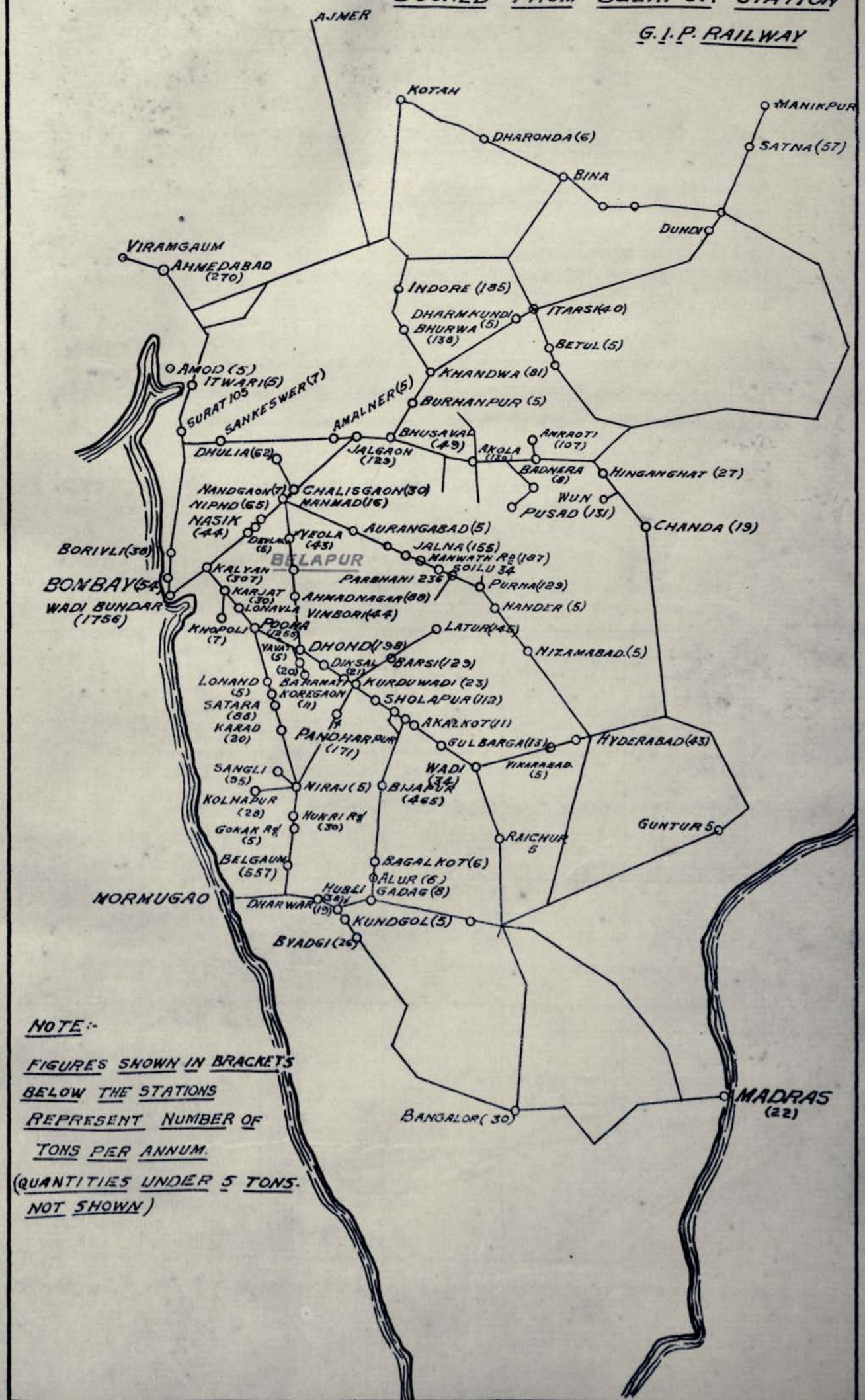
G. I. P. Railway	..	..	..	76·31 per cent.
B. B. & C. I. Railway	..	..	..	60·0 per cent.
M. & S. M. Railway	..	..	..	55·0 per cent.
Barsi Light Railway	..	..	..	63·9 per cent.
Dhond-Baramati (revised)	..	..	..	52·4 per cent.
Nizam's State (B.G. & M.G.)		..	..	52·4 per cent.

MAP No. 3

DIAGRAM SHOWING

ACTUAL DESTINATIONS OF SUGAR BOOKED FROM BELAPUR STATION

G.I.P. RAILWAY



NOTE:-

FIGURES SHOWN IN BRACKETS BELOW THE STATIONS REPRESENT NUMBER OF TONS PER ANNUM.

(QUANTITIES UNDER 5 TONS. NOT SHOWN)

G.P.P.O. POONA, 1933

GRAPH No. 1

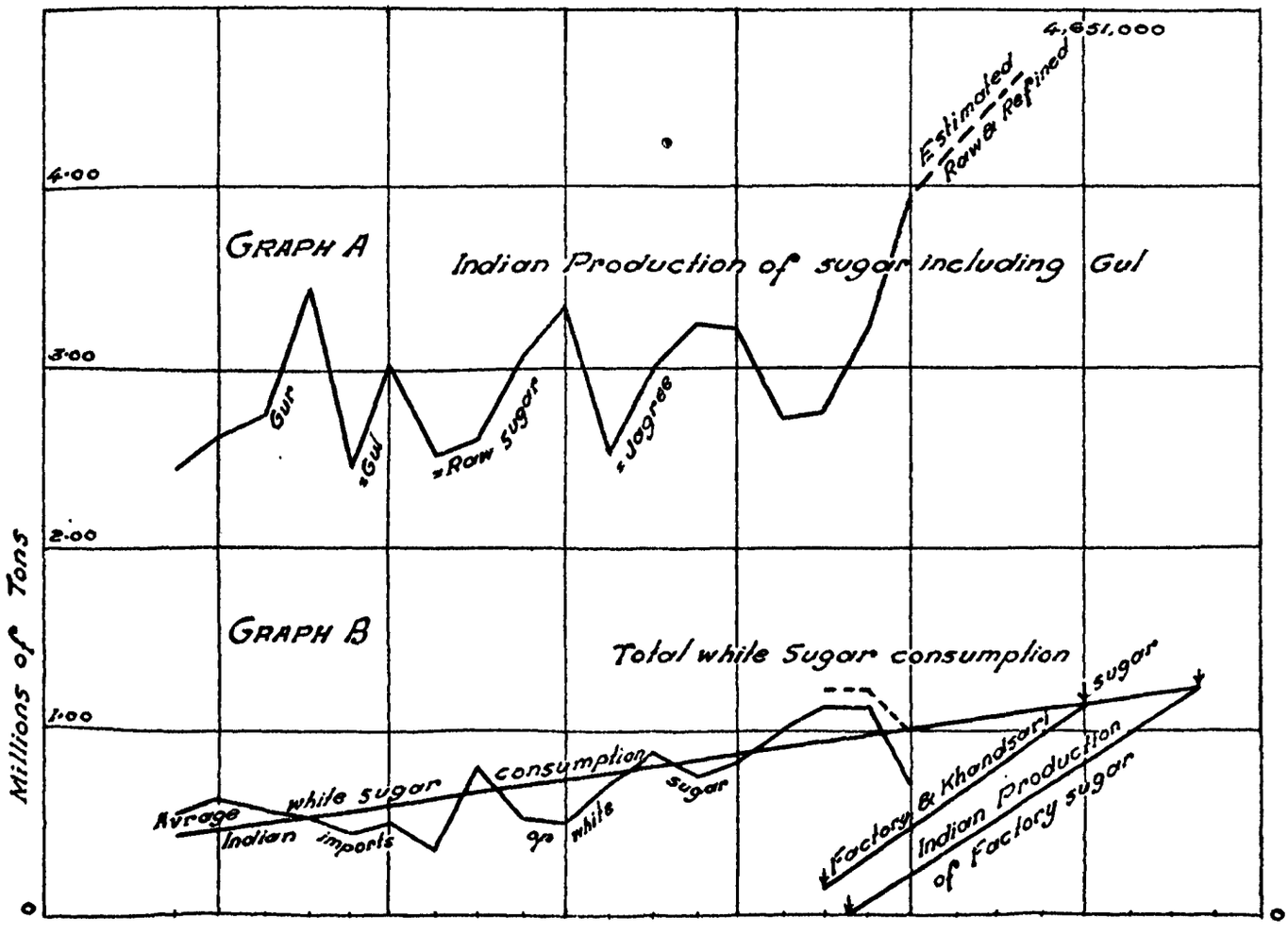
SHOWING PRODUCTION OF SUGAR IN INDIA

&

PROBABLE DATE BY WHICH FACTORY SUGAR PRODUCTION WILL EQUAL THE DEMAND

Explanation.

Graphs A, & B are plotted from the same base line o o., neglecting khandsari sugar, Factory refined sugar production is seen to equal the figure of Indian consumption of Factory sugar where the lines cut against the year 1938.



S.P.S.O. POONA, 1933.

TABLE No. III.

The profit earning value of transport of sugar and by-products.

Item.	Figures for a 400 ton factory (2,000 acres under cane). Quantity.	Rate per ton.	Average lead.	Amount.	Approximate tons per acre.	Profit earning value after deducting working expenses at 60 per cent.	Figures from Column 7 multiplied by 7½ for 15,000 acres.	Net earnings on 2,000 acres after deducting working expenses at 62 per cent., i.e. 38 per cent. of figures in Column 5.	Net earnings from Column 9 for 15,000 acres.
1	2	3	4	5	6	7	8	9	10
	tons.	Rs. a. p.	miles.	Rs.		Rs.	Rs.	Rs.	Rs.
Exports.									
Sugar	8,000	....	..	..	4	..	..	..	..
Sugar after deduction for local consumption	7,800	21 15 4	350	1,71,275	..	68,510	5,13,825	Not applicable.	
Deduct for haul on existing lines ..	7,800	21 15 4	315	1,54,700	..	61,880	4,64,100	Do.	
Balance creditable to proposed line (haulage for 35 miles at the long haul tariff)	..	....	..	16,575	..	6,630	49,725	..	..
Molasses	2,500	....	..	..	1¼	..	..	..	..
Molasses after deduction for local consumption	2,000	12 5 2	240	24,650	..	9,860	73,950	9,367	70,253
Imports.									
Manures—Oil cake	1,930	4 15 4	350	9,578	1	3,831	28,734	3,640	27,300
Sulphates ..	390	4 12 9	330	1,869	¼	748	5,607	710	5,325
Fuel—Coal	400	12 0 0	950	4,800	¼	1,920	14,400	1,824	13,680
Crude oil	400	19 13 3	330	7,931		3,172	23,793	3,014	22,604
Miscellaneous stores	350	13 5 9	250	4,008		1,604	12,024	1,523	11,423
				69,411	7	27,768	2,08,233	20,078	1,50,585

CHAPTER VII.

COSTS AND RATES.

Engineering.

100. In general a level of rates 15 per cent. below those obtaining in 1928 has been allowed for. The costs of three important bridges have been estimated.

(1) Over the Bhima river at Sangam (Narsingpur),

(2) Over the Nira river near Akluj, and

(3) Over the Nira river at Asu.

Sites of two of these have been reconnoitred and the estimated figures have been shown in the respective detailed estimates. In order to obtain a figure of cost for these bridges the method advocated by Sir Francis Spring has been adopted; i.e. the rate in rupees per superficial foot of overall side area has been obtained from records of similar bridges in the vicinity and proportionate rates have been applied to the bridges under consideration as tabulated below :—

	2'—6" gauge	5'—6" gauge
Girder bridges	7·0	9·5
Masonry bridges	8·0	12·0

Commercial.

101. The investigations show that, provided a new project has a "sound constitution"—that is to say that if, with every doubtful case used against it, it will nevertheless pay 1½ per cent. or 2½ per cent. on the normal traffic of the area—then *for all projects serving four or more factory areas* it will become a 4 per cent. to 6 per cent. proposition on the value of the sugar and fertilizer earnings; but that if it has not a "sound constitution" any decline in sugar factory earnings will place the

project on the road to insolvency. For example the Akluj-Pandharpur project may yield 5·4 per cent. dividend if five factories are working, 2·66 per cent. if four factories are working and a dead loss if no factories work.

Rates for third class passengers.

102. The average third class fares by ordinary trains on the G. I. P. Railway (1931–32 statistics) are :—

2′—6″ gauge	4·87 pies per mile.
5′—6″ gauge	3·33 pies per mile.

'Bus fares obtaining in the district are as follows :—

—	Distance in miles.	Rate per mile.	Remarks.
		Pies.	
*Pandharpur to Malsiras	32	4½	
*Pandharpur to Nateputa	43	5½	This rate includes 4 tolls at 8 annas each which represents 0·45 pies per passenger mile.
*Indapur to Baramati	32	6	
Poona to Nira	42	3½	
Indapur to Poona (*via* Diksal)	84	3·4	Additional tolls at Rs. 2 per 'bus are being introduced which represents 0·35 pies per passenger mile.
Indapur to Poona (*via* Baramati)	95	3	The existing tolls amount to Rs. 3 per 'bus which represent 0·45 pies per passenger mile.
*Lahore to Amritsar	*35*	*2·1*	*Vide page 17 of "Punjab" in the Road-Rail Report.*

* There is no rail competition on these routes.

Note.—Number of passengers in a 'bus found by actual count averages 20.

Railway third class fares in competition with 'bus traffic have been reduced according to the following examples :—

Railway.	Gauge.	Reduced rate per mile.	Remarks.
		Pies.	
B. & N. W.	Meter.	2½	*Vide* page 16 of "U. P." in Road-Rail Report.
†B. B. & C. I.	2′—6″	2½	*Vide* pages 17 and 18 of "Bombay" in the Road-Rail Report.
N. W.	5′—6″	2½	Return fares in competition with 'buses.

† This reduction is from 4½ pies per mile and has resulted in one case in an increase in numbers of passengers of 270 per cent. (two hundred and seventy per cent.) and in another case 41 per cent.

The conclusion drawn from the above and other information is that, in estimating the prospects of new lines, it is not safe to allow third class fares higher than 2½ pies per mile or a corresponding increase in numbers (on reduction of fares from 4·87 pies to 2·5 pies per mile) of more than 40 per cent.

The lower rate cannot be justified unless it can be shown that it will not result in passenger trains being run at a loss. From the analysis of working of the G. I. P. Railway (page 246 of the 1931-32 Annual Report) it is seen that coaching earnings per train mile were Rs. 1·73 and that the cost of hauling a passenger train per mile was Rs. 0·82 (compare with 1·72 and 0·85 arrived at *vide* paragraphs 104 and 108 below for total and dependent costs respectively). To achieve this at 2½ pies per mile trains must carry 132 third class passengers in order to maintain the present standard of earnings, or 65 third class passengers in order to meet the dependent costs of haulage on 2′—6″ gauge lines.

If a railway is to be built at all it must be equipped and staffed, and it has been shown in paragraph 108 below that the cost per mile per annum under this head is Rs. 1,268 whether passenger trains run or not. If only goods trains run, this overhead charge of Rs. 1,268 must be met entirely out of surplus goods earnings. If passenger trains run, then provided they earn something more than Rs. 0·85 per mile (paragraph 108), they will be making some contribution towards meeting the fixed proportion of operating expenses over and above the mere cost of fuel, running staff, repairs etc., comprised in the figure of Rs. 0·85 per train mile.

Regarded from the standpoint of paying its share of working expenses such passenger traffic would be run at a loss, but so long as it were to make any contribution whatever towards the fixed overhead charges (quite apart from any surplus towards payment of interest on capital and contribution to central revenues) it would not pay the railway to discard it. If the goods traffic cannot bear the resulting disproportionate share of independent costs the project must be abandoned.

Rates for goods traffic.

103. Except for a few items such as gul (jagree), coal, piece-goods, molasses etc., the rates over the Dhond-Baramati section exceed those over the main line by about 50 per cent. The Agent, G. I. P. Railway, in his letter No. 3759/D. 29, dated the 22nd February 1929, has pointed out that lower rates must be allowed for in the traffic survey for Baramati-Baura Railway Project.

Bullock cart transport in the area is already established and efficient, for example, personal enquiries have shown that bullock carts are in general prepared to work at rates as low as 1·44 pies per maund per mile. An even lower rate prevails at Baramati where bullock carts, competing with the Dhond-Baramati Railway and obtaining a return load, charge Re. 1–4–0 for 18 miles to Diksal which, at 13 maunds per cart, reduces to 1 pie per maund per mile. To meet this competition the Dhond-Baramati have reduced their "*via* Dhond" rates for gul to 0·4 pies per maund per mile (say 0·42 to include transhipment charges). In this case the "distance ratio" is 2·4, i.e. the distance by railway must not be more than 2·4 times that by cart. To be on the safe side this ratio may be taken as 2, thus allowing for a bullock cart rate lower than any yet met with or reported.

As regards 'bus competition, from page 17 of "Punjab" in the Road-Rail Report, it is seen that the extreme case (admitted as uneconomical) is recorded of 0·6 pies per maund per mile and that one pie per maund per mile is the lowest reasonably possible rate on an overloaded lorry. By adopting so low a rate, some allowance is made for reduced costs for compression ignition motors running on heavy oil.

In order to solve the problem as to what traffic may be diverted to any of the proposed railway projects certain assumptions are made. These are, firstly, that freights not higher than broad gauge rates will be charged on narrow gauge lines and, secondly, that road transport rates as low as 1 pie per maund per mile must be reckoned with. On this basis the distance ratios for certain goods are obtained as follows :—

Gul (jagree, country sugar)	Ratio by which rail distance may exceed road distance is 2·4 (say 2·0).
Sugar	

Note.—Actuals obtained from the G. I. P. Railway for the average haul for sugar from Belapur factory area. The railway rate charged per maund per mile for 76 miles and over is 0·42 pies per maund per mile.

Food grains	The lowest special quotation rate (G. I. P.) *via* Kurduwadi and Raichur is 0·23 pies per maund per mile. Rail distance may exceed road by four times.
Oil cake, iron and steel, sulphate etc. (Actuals of distances for Belapur). ..	The ratio equals 10.
Unclassified goods	For 184 miles lead the rate is 1·3 pies per mile per maund. Distance ratio equals zero i.e., bullock cart haul is cheaper than rail transport.

CHAPTER VIII.

Working Expenses.

Based on actuals for Dhond-Baramati Railway.

104. The Dhond-Baramati Railway is a 2'—6" gauge line worked by the G. I. P. Railway at an agreed operating ratio of 45 per cent. For some years a share of excess earnings was gained by the G. I. P. Railway but of recent years this has not been the case. Operating expenses have risen in 1931–32, according to available figures, to 48·6 per cent. and the G. I. P. Railway have had to make good the deficiency.

Dhond-Baramati Railway.

Gauge	2'—6"
Length excluding siding	27·26 miles.

Working expenses in thousands.

Head of accounts.	Actuals.		Percentage.		Recovery at 45 per cent.		Loss.	
	30–31	31–32	30–31	31–32	30–31	31–32	30–31	31–32
A ..	26	21·6	35·2	34·1	25·4	20·0	0·6	1·6
B ..	36	24·7	48·6	39·0	35·0	22·9	1·0	1·8
C ..	3	7·7	4·0	12·2	2·9	7·1	0·1	0·6
E ..	7	7·0	9·6	11·1	6·9	6·5	0·1	0·5
F ..	1	0·9	1·3	1·4	0·9	0·8	0·1	0·1
G ..	1	1·4	1·3	2·2	0·9	1·3	0·1	0·1
	74	63·3	100·0	100·0	72·0	58·6	2·0	4·7

Further enquiries have shown that the figures tabulated above under the various abstracts as "actuals" include all charges except full share of general administration, i.e. cost of Executive and Administrative offices, Medical, Stores, Police etc. Cost of subordinate staff is included.

It has not been possible to work out figures according to standard forms given in "Rules for the Preparation of Railway Projects" due to the fact that details by abstracts for 2'—6" gauge lines on the G. I. P. Railway system are not furnished. However, from the analysis of operating expenses for class I railways, pages 178 to 203 of the Railway Board Report, the percentages allowed on the G. I. P. Railway main line are obtainable and can be applied to the available Dhond-Baramati railway figures and a correct figure for working expenses of the D.-B. Railway can be found for the year 1931–32 as tabulated below : —

Head of accounts.	Actuals obtained from G. I. P. headquarters corresponding to an operating ratio of 48·6 per cent.	Percentage addition for general administration.	Amount of addition.	Corrected actuals.
	Rs.	Rs.	Rs.	Rs.
A ..	21,600	1·22	263	21,863
B ..	24,700	2·09	516	25,216
C ..	7,700	0·88	68	7,768
E ..	7,000	2·01	140	7,140
F ..	900	300·00	2,700	3,600
G ..	1,400	100·00	1,400	2,800
Total ..	63,300	....	5,087	68,387

The gross earnings for the year 1931–32 were	..	Rs. 1,30,344.
Thus the true operating ratio was	..	52·4 per cent.
The true working expenses per mile were	..	Rs. 2,510.
The true working expenses per train mile were (Two mixed trains each way per day).	..	Rs. 1·72.

Actuals for the Barsi Light Railway for the year 1931–32.

105. This is a company-owned line worked under its own management and control; gauge 2′–6″; length 202·57 miles.

Operating ratio (1931–32)	63·91 per cent.
Total working expenses (p. 57 of 1931–32 "Report").. ..	Rs. 12,99,000
Total working expenses per mile per annum	Rs. 6,410
Working expenses per train mile (approximate)	Rs. 2·50

Total daily train miles on the Barsi Light Railway at the time of our enquiry were :—

Passenger	664
Mixed	642 excluding special trains for fairs.

There are four fairs or religious festivals held during the year at Pandharpur and an addition of 12 per cent. may be made to the passenger train mileage on account of these. Thus the total train miles per day is approximately 1,386.

Actuals of operating expenses for the undermentioned railways.

106. Details for 2′–6″ gauge (there are no 2′ gauge lines in these cases)—pp. 178-203 of the "Report".

Abstract.	Bengal–Nagpur.			B. B. & C. I.			Eastern Bengal		
	Amount.	Percentage.	Per train mile.	Amount.	Percentage.	Per train mile.	Amount.	Percentage.	Per train mile.
	Rs.		As.	Rs.		As.	Rs.		As.
A ..	13,13,460	32	12·5	1,93,518	27	7·4	47,427	30·2	6·9
B ..	13,20,198	32·2	12·6	2,67,251	38·3	10·5	58,704	37·4	8·54
C ..	4,50,042	11	4·28	69,433	9·68	2·72	21,769	13·9	3·17
E ..	5,56,897	13·6	5·30	11,914	16·7	4·68	23,701	15·1	3·45
F ..	3,63,187	6·85	3·46	44,919	6·26	1·76	4,096	7·61	0·60
G ..	1,01,140	2·46	0·96	14,931	2·08	0·59	1,475	0·94	0·21
			39·1			27·65			22·87

Note.—Details not given for G. I. P.

Reducing the above figures, which are in annas, to rupees we obtain the following operating costs in rupees per train mile for 2′–6″ gauge lines :—

Dhond-Baramati.	Bengal-Nagpur.	B. B. & C. I.	Eastern Bengal.	Barsi Light.
1·72	2·44	1·73	1·43	2·50

Accepted figures.

107. On our tour we noted that the Barsi Light Railway is operated with powerful tender engines of the 4-6-4 wheel arrangement compared with 2-6-2 type tank engines on the Dhond-Baramati section, and also that the length of train on the Barsi Light Railway was approximately twice that on the Dhond-Baramati Railway. This accounts for much of the excess in train mile rates. More complete figures have been obtained for working expenses of the Dhond-Baramati Railway than for any other and the figures obtained for working expenses on this line are adopted for all 2′–6″ gauge projects investigated below.

Dependent and independent costs.

108. The following table gives approximate figures for those costs which are independent of train mileage. They are derived from Dhond-Baramati actuals and B. B. & C. I. Railway percentages, *vide* the Railway Board Report pp. 178–203.

Total and independent charges in working expenses for Dhond-Baramati Railway from corrected actuals.

Head of accounts.	Corrected actuals for whole line.	Percentage of total working expenses.		Independent amount in Rs. per mile per annum.	Dependent amount in Rs. per mile per annum.
		Corrected actuals.	Independent of train mileage.		
	Rs.				
A	21,863	32	28		
B	25,216	36·8	6		
C	7,768	11·4	2·8		
E	7,140	10·4	6·7		
F	3,600	5·3	5·0		
G	2,800	4·1	2·0		
	68,387 (Rs. 2,510 per mile)	100·0	50·5*	1,268	1,242

**Check.*—Compared with the proportion of 50·5 per cent. arrived at above, the proportion given in Wellington's "Economic Theory of Railway Location" is 50 per cent.

The above figures are based on actuals at two trains each way per day. Thus dependent cost per train mile is Re. 0·85.

Summary of accepted figures for working expenses for 2'–6" gauge projects.

109.

	With two mixed trains each way per day.	With three mixed trains each way per day.
	Rs.	Rs.
Working expenses per mile per annum.	2,510	1,268 plus 1,863 = 3,131
Working expenses per mile per week ..	48·3	60·2
Working expenses per train mile ..	1·72	1·43
	Rs.	
(Independent ..	0 87	
Dependent ..	0·85)	

Note.—The *dependent* costs per mixed train mile per annum as above work out to Rs. 310·5. In the case of traffic from six sugar factories necessitating additional goods sidings, land, sheds, signalling, equipment, etc., the *dependent* cost per goods train mile per annum will exceed the above mixed train figure of Rs. 310·5. In the absence of details for calculating these extras a figure of dependent cost per goods train mile per annum of Rs. 450 is taken. Thus working expenses per mile per annum for a 2'–6" gauge line of two mixed and one goods train each way per day is equal to

Rs.		Rs.	
2,510		1,268	(independent).
plus 900	*or*	1,242	(4 mixed).
		900	(2 goods).
3,410 per mile.		3,410	per mile.

In cases where produce of only four factories has to be dealt with by the above two goods trains, a figure of Rs. 800 per mile per annum is taken.

Working expenses for 5'–6" gauge lines.

110. Details of working expenses based on figures worked out for the Hoshiarpur-Tanda Urmer Standard C Railway on the North Western Railway in 1930 for two mixed trains each way per day :—

Head of accounts.	Per mile of line maintained.
	Rs.
A	1,747
B	1,852
C	639
E	704
F	123
G	35
	5,100

CHAPTER IX.

Financial Results of Narrow Gauge Railway Projects.

I. Baramati-Baura Railway Project (via Indapur).

(Amended according to up to date conditions.)

Note.—The basis of this estimate is the 1928–29 Traffic Survey Report.

Length	42 miles.
Gauge	2′–6″
Capital cost per mile—	Rs.
(*a*) as previously estimated	68,500
(*b*) at 85 per cent. of above for fall in costs since 1928 ..	58,225
(*c*) as estimated below..	60,844

111. It is stated in the 1928–29 Report that the figure of Rs. 68,500 includes allowance for rolling stock but no mention is made of additional facilities at Baramati or Dhond. The reduced figure of Rs. 58,225 may be compared with the figure of Rs. 60,000 per mile allowed by the Barsi Light Railway in a revised manuscript estimate for the 28 miles Pandharpur-Akluj project including Rs. 10,000 per mile for rolling stock, and Rs. 17,000 for junction arrangements at Pandharpur. The rate per mile excluding junction arrangements for the latter project reduces to Rs. 59,400 per mile.

Capital cost.

112.

		Rs.
Cost of 42 miles at Rs. 58,225 per mile		24,45,450
Add for additional facilities at Baramati and Dhond ..		20,000
Add for interest on capital cost during construction at expenditure in two years of Rs. 10·00 and Rs. 14·65 lakhs each year—		
at end of first year	$= \frac{4}{100} \times \frac{10}{2}$	
	$= 0{\cdot}2$	
at end of second year	$= 0{\cdot}2 + \frac{4}{100}\left(0{\cdot}2 + 10 + \frac{14{\cdot}65}{2}\right)$	
	$= 0{\cdot}9$	90,000
Total capital cost ..		25,55,450

Passenger traffic.

113. (*a*) *Rate.*—2½ pies per III class passenger per mile (*vide* paragraph 102).

(*b*) *Distances travelled.*—In the 1928 traffic survey these have been estimated in local booking at 67,500 for an average distance of 30 miles and in through booking a further 67,500 passengers are allowed for and credited (p. 14 of the 1928–29 Report) with 28 miles on the proposed line and 57 on the existing line, namely 85 miles per passenger.

A reference to page 243 of the 1931–32 G.I.P. Annual Report shows that the "average number of miles a passenger was carried" was, for III class passengers on G. I. P. Railway 2′–6″ gauge lines in 1931–32, seventeen miles only. The corresponding figure for the Barsi Light Railway is 35 miles. Thus the figures of average lead are to be modified, an average figure of 24 miles being taken.

(*c*) *Numbers.*—Statistics for the Dhond-Baramati Railway show that :

Lower class fares in 1931–32 earned (at the average rate of 4·9 pies per mile)	Rs. 46,705
Equivalent number of passengers at 17 miles per passenger ..	108,000
Number of passengers travelling per mile of railway per year ..	3,960
At this rate the total number of lower class passengers travelling per year on the proposed line would be	166,000

On pages 17 and 18 of "Bombay" in the Road-Rail Report examples are quoted of the effect on numbers of reducing the fare per passenger (on narrow gauge lines) from 4½ pies to 2½ pies per mile. In one case the numbers are increased by about 270 per cent. and in the other by about 41 per cent.

In estimating the prospects of the proposed line it is intended to reduce fares from the Dhond-Baramati Railway rate of 4·9 pies to 2½ pies (an even larger range of reduction than in the cases quoted above), and some improvement over the Dhond-Baramati Railway *numbers* is to be expected.

On the other hand there are four 'buses', representing four double journeys per day (and charging the high rate of 6 pies per mile) running between Indapur and Baramati, so that under the circumstances, the increase in numbers due to lower fares is taken at 33 per cent. only.

Number of passengers travelling per mile of railway per year ..	5,280
Total number of passengers travelling per year on the proposed line	221,760

Earnings.

114. (1) *Coaching.*—

—	Numbers.	Distance.	Rate.	Amount.
		Miles	Pies.	Rs.
III class passengers	221,000	24	2½	69,300
Mela traffic	5,000	42	2½	2,734
Upper class passengers	....	....	....	489
Other coaching earnings at Rs. 131 per mile actuals on Dhond-Baramati Railway	....	....	....	5,502
				78,025
Add 5 per cent. of 78,025 for additional interchange traffic after allowing 62 per cent. share of working expenses	....	....	....	3,901
Total coaching earnings ..	....	....	....	81,926*

*Corresponding figure in the 1928 survey was Rs. 1,37,498.

The above figures are based on present day actuals for railways similar to that proposed and therefore they include any allowance for development during the five years after a railway is opened to traffic.

Note.—

	Rs.
Coaching earnings per mile on Dhond-Baramati Railway in 1931-32	1,891
Coaching earnings per mile on proposed line (as calculated in 1928 survey) ..	3,273
Coaching earnings per mile on proposed line as now estimated	1,950

(2) *Goods.*—The quantities worked out for the 1928 traffic survey may be accepted but the rates as pointed out by the Agent, G. I. P. Railway, in his letter No. 3759-D/29, dated the 22nd of February 1929, are those applicable to the Dhond-Baramati Railway, i.e. 1½ times the corresponding main line rates. Such high rates cannot be maintained in competition with established cart traffic, *vide* paragraph 103.

On the other hand the working of 2'-6" gauge lines in the neighbourhood shows that goods in general are able to bear some excess over broad gauge figures. In view, however, of the risk of a rate cutting war with a very efficient cartage system working on shorter routes, only the normal broad gauge rates are allowed for. Thus only two thirds of the earnings as given on page 18 of the 1928 project report are allowed for in this revision, i.e., two thirds of Rs. 72,488 = Rs. 48,325. After 5 years this figure is shown in the 1928 project as increasing by 30 per cent. An increase of Rs. 5,000 is allowed in this revision, giving a figure of Rs. 53,325. Add gross earnings corresponding to Rs. 25,994 net on page 21 of 1928 project multiplied by ⅔ for reduction in rates, i.e. ⅔×45,610=Rs. 30,410 for gross interchange 5 years after opening to traffic.

These figures may be split up into branch line and interchange figures as follows :—

	Coaching.	Goods.	Total.
	Rs.	Rs.	Rs.
Gross earnings of branch	78,025	53,325	1,31,350
Gross earnings of connected lines ..	10,266	30,410	40,676
Total ..	88,291	83,735	1,72,026

Working Expenses.

115. These have been worked out in detail in Chapter VIII and for two trains each way per day are equal to Rs. 2,510 per mile per annum.

Gross Earnings per mile per annum.

	Rs.
Branch	3,120
Existing connected lines	970
	4,090

Financial Results.

1.	Length of line	42 miles.
2.	Gauge	2'-6"
		Rs.
3.	Capital cost including junction arrangements, interest on capital and cost of rolling stock	25,55,450
4.	Cost per mile of rolling stock (on Barsi Light Railway figures)	10,000
5.	Cost of junction arrangements	20,000
6.	Gross earnings of branch	1,31,350
7.	Gross earnings of branch per mile per week	60,000
8.	Gross earnings of branch per train mile	2·14
9.	Working expenses of branch 42 × 2,510	1,05,420
10.	Working expenses of branch per mile per week	48·39
11.	Working expenses of branch per train mile	1·72
12.	Gross earnings of existing lines from new traffic interchanged with the projected line	40,676
13.	Percentage of working expenses to gross earnings prevailing on connected existing lines	62 per cent.
14.	Working expenses of existing lines for new traffic interchanged with the projected line	25,219
15.	*Net earnings of branch*	25,930
16.	Net earnings of existing lines from new traffic interchanged with the projected line	15,457
17.	Net income to be credited to projected line	41,387
18.	Percentage return on capital cost in 6th year after opening	1·62 per cent.
19.	Operating ratio of branch line for traffic worked over branch line only ..	80·0 per cent.

II. Baramati-Baura Railway Project (via Nimgaon-Ketki and Shetpal).

Length	36 miles.
Gauge	2'-6"
Capital cost per mile (including rolling stock, interest on capital during construction and junction arrangements as for Baramati-Baura *via* Indapur estimate)	Rs. 61,000

116. The reduction in length is obtained by cutting out the diversion *via* Indapur. Indapur is said locally no longer to be a trade centre and the Mamlatdar explained that merchants are leaving in favour of more flourishing centres such as Akluj. These statements are to be taken with reserve.

Earnings.

117. Coaching and goods earnings for the ordinary trade of the district will be the same per mile as for the Baramati-Baura *via* Indapur Project.

Sugar.

118. One sugar factory area is served for which the gross earnings are tabulated below :—

Quantity.	Earnings.	
	Rs.	
Sugar	8,380	on actual 17 miles from Lasurna to Baramati.
Molasses	24,650	
Oil cake	9,578	
Sulphates	1,864	
Coal	4,800	
Fuel oil	7,931	
Miscellaneous stores ..	4,008	

The above earnings are divided between "existing" and "branch" lines as under :—

Item.	Gross earnings of		Total.
	Branch (17 miles).	Existing.	
	Rs.	Rs.	Rs.
Sugar	8,380	....	
Molasses	3,595	21,055	
Manures	1,000	8,578	
Sulphates	200	1,669	
Fuel (coal)	100	4,700	
Crude oil	1,000	6,931	
Miscellaneous stores	500	3,508	
Total ..	14,775	46,441	61,216

Working Expenses.

119. These on the proposed branch line for two mixed trains each way per day will be the same as worked out for the Baramati-Baura *via* Indapur Project with an addition of Rs. 10,000 on account of sugar traffic.

Financial Results.

(Baramati-Baura via Shetphal.)

	By ordinary trade of the area.	Including one sugar factory.
1. Length of line—36 miles.		
2. Gauge —2'-6"	Rs.	Rs.
3. Capital cost including junction arrangements, interest on capital cost and cost of rolling stock	21,06,000	....
4. Cost per mile of rolling stock (based on Barsi Light Railway figures) ..	10,000	....
5. Cost of junction arrangements	20,000	....
6. Gross earnings of branch	1,12,350	1,27,125
7. Gross earnings of branch per mile per week	60·00	67·9
8. Gross earnings of branch per train mile	2·14	2·43
9. Working expenses of branch 36 × 2,510	90,360	1,00,360
10. Working expenses of branch per mile per week	48·4	53·6
11. Working expenses of branch per train mile	1·7	1·9
12. Gross earnings of existing lines from new traffic interchanged with the projected line	34,920	81,361
13. Percentage of working expenses to gross earnings prevailing on connected existing lines	62 per cent.	62 per cent.
14. Working expenses of existing lines for new traffic interchanged with the projected line	21,640	50,444
15. *Net earnings of branch*	....	26,765
16. Net earnings of existing lines from new traffic interchanged with the projected line	....	30,917
17. Net income to be credited to projected line	....	57,682
18. Percentage return on capital cost in 6th year after opening ..	1·62 per cent.	2·6 per cent.
19. Operating ratio of branch line for traffic worked over branch line only ..	80·0 per cent.	78·9 per cent.

Bridge at Pandharpur (Barsi Light Railway).

III. Baramati-Baura-Akluj-Velapur-Pandharpur Railway Project (via Left Bank).

Length	70 miles, i.e. 36 + 6 + 28.
Gauge	2′-6″.
Capital cost per mile including rolling stock, junction arrangements and interest on capital	Rs. 66,221

General.

120. This project has been recommended in the Report (page 20) of the Deccan Canals Financial Improvement Committee. It has the advantage of serving six sugar factory estates of which one (near Akluj) has so far been taken up and machinery for the factory has been ordered. Production is expected to start in about a year. Machinery for the Lasurna factory is also said to have been ordered.

By connecting with the G. I. P. Railway main line *via* Baramati and Dhond at one end, and with the G. I. P. Railway and M. & S. M. R. *via* the Barsi Light Railway (*via* Pandharpur) at the other, investigation shows that the greater part of Akluj trade can be captured from the carts in which it travels at present, provided that main line rates are charged on the new 2′-6″ gauge line. These rates have been followed in the calculations.

Engineering.

121. Rates per mile as already obtained for the following sections have been allowed :—

	Rs.	Rs.
(1) 36 miles from Baramati to Baura and 6 on to Akluj are allowed at the Baramati-Baura rate, i.e. 42 miles at 58,225 per mile (including rolling stock)		24,47,000
(2) 28 miles from Akluj to Pandharpur are allowed at the rate worked out by the Barsi Light Railway for the Pandharpur-Akluj Project (including junction arrangements at Pandharpur and rolling stock), i.e. 28 miles at 60,000 per mile		16,80,000
(3) Nira river bridge. From a sketch made at the Sarati ford and from data tabulated in paragraph 100 the cost of the bridge is estimated as follows :—		
10 spans of 60′ girders. Total length from end to end of wing walls	640 feet.	
Average height from rail level to bottom of founds	52 feet.	
Total side area	33,580 sq. ft.	
	Rs.	
Cost at Rs. 7 per square foot of overall side area ..	2,35,000	
Add for approach banks	1,000	
	2,36,000	2,36,000
(4) Additional facilities at Dhond and Baramati		20,000
(5) Interest on capital cost during construction—		
Allowing 3 years, the expenditure is taken as—		
1st	10,00,000	
2nd	20,00,000	
3rd	13,83,000	

After 1st year

$$\left(\frac{4}{100} \times \frac{10,00,000}{2}\right) = 20,000$$

After 2nd year

$$= 0{\cdot}2 + \frac{4}{100}\left(10 + \frac{20}{2} + 0{\cdot}2\right).$$

$$= 0{\cdot}2 + 0{\cdot}808 = 1,00,800$$

After 3rd year

$$1{\cdot}008 + \frac{4}{100}\left(10{\cdot}0 + 20{\cdot}0 + \frac{13{\cdot}83}{2} + 1{\cdot}008\right)$$

$$= 1{\cdot}008 + \frac{4}{100}\left(37{\cdot}918\right)$$

$$= 1{\cdot}008 + 1{\cdot}51672 =$$

..	2,52,472
(6) Total cost of railway including rolling stock, junction arrangements and interest on capital cost	46,35,472
(7) Total cost of railway including rolling stock, junction arrangements and interest on capital cost per mile	66,221

Commercial.

122. (*a*) *Present trade between Akluj, Baura and Diksal.* There is no road bridge below Nira over the Nira river and the railway will be the cheapest route. Three quarters of this trade may safely be taken as diverted *via* Dhond, and the new line at the outset (see Map No. 2).

If a road bridge be built subsequently, imports from the Bombay direction and exports northwards, all of which must pass through Dhond, will have the alternative routes as under :

	Via proposed line.	*Via* Diksal.
(*i*) *Akluj to Dhond*		
Rail distance	69	18
Road distance	....	36
Rail equivalent (for sugar) of one transhipment ..	6	....
Total ..	75	54

A reference to distance ratios in paragraph 103 shows that this trade can be captured. but actually only three quarters have been shown as coming to this branch.

To facilitate estimates of earnings from Akluj trade this has been split up and analysed in Table IV below (*vide* pages 36-37).

	By Rail.	By Road.
(*ii*) *Akluj to Kurduwadi* (*for south bound traffic*)—		
By proposed railway 28		
By Barsi Light Railway 33		
—	61	....
Rail equivalent of one transhipment	6	....
Total ..	67	32
Distance ratio		2·1

Thus as seen from paragraph 103 the greater part of the Kurduwadi portion of Akluj trade may be diverted to the railway *via* Pandharpur. This will not apply if a road bridge be built over the Bhima river which is unfordable during the monsoon. Owing to the uncertainty of capturing this trade from carts, only three quarters is taken as coming to the railway.

General coaching and goods earnings.

123. The rates for these will be approximately the same as those worked out for the Baramati-Baura *via* Indapur Project.

	Rs.
Gross earnings per mile per annum of branch line ..	3,120
Gross earnings per mile per annum of existing line ..	970

Akluj exports and imports.

124. To these have to be added the gross-earnings of three quarters of Akluj trade (Table No. IV). These may be summarised as follows :

	Via Dhond.	*Via* Pandharpur.	*Via* Kurduwadi.	Total.
	Rs.	Rs.	Rs.	Rs.
By branch	12,876	2,580	8,220	23,676
By existing connected lines	2,636	*Nil.*	9,400	12,036

Sugar traffic.

125. For one 400 ton factory the gross earnings are as follows :—

	Gross earnings.		Total.
	Branch line (35 miles).	Connected lines.	
	Rs.	Rs.	Rs.
Sugar	16,575	....	
Molasses	3,595	21,055	
Manures	1,000	8,578	
Sulphates	200	1,069	
Fuel (coal)	100	4,700	
Crude oil	1,000	6,931	
Miscellaneous stores	500	3,508	
Total ..	22,970	46,441	69,411

The branch serves six factory areas, of which two have been taken up.

The gross earnings for these six factory areas are :—

		Rs.
Branch line	6 × 22,970 ..	1,37,820
Connected lines..	6 × 46,441 ..	2,78,646

Working expenses.

126. The figure of Rs. 2,510 per mile worked out for the two mixed trains each way for the Baramati-Baura *via* Indapur project will meet all general traffic. An addition of Rs. 8,000 is made on account of Akluj trade on the branch. To deal with the sugar traffic one additional train each way will be required and the dependent cost of these trains (*vide* Chapter VIII) would be Rs. 622 per mile.

This figure of Rs. 622 takes no account of extra siding accommodation, goods sheds, etc., which the introduction of heavy goods traffic would necessitate. As given in paragraph 109, the corresponding figure of extras for two goods trains is equal to 2×450=Rs. 900 equals Rs. 63,000 for the line.

Earnings with four sugar factories in place of six.

127. In the event of only four factories being taken up the gross earnings for sugar and by-products transportation would be :—

		Rs.
(*a*) Branch line	4 × 22,970 ..	91,880
(*b*) Connected lines	4 × 46,441 ..	1,85,764

Working expenses.

Additional on reduced quantities of sugar as above at approximately Rs. 800 per mile—Rs. 56,000.

The resulting figures are shown in the table of financial results :—

Financial Results.

——	By ordinary trade of the area.	By three fourths of Akluj imports and exports.	By six factories.	Total with six factories.	By four factories.	Total with four factories.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Length of line—70 miles..	....	....	....	....	....	....
2. Gauge—2'-6" ..	....	....	....	....	....	....
3. Capital cost including junction arrangements, interest on capital and cost of rolling stock ..	46,35,472	....	....	....	....	....
4. Cost per mile of rolling stock (based on Barsi Light Railway figures)..	10,000	....	....	....	....	....
5. Cost of junction arrangements	37,000	....	....	....	....	....
6. Gross earnings of branch..	2,18,400	23,625	1,37,820	3,79,845	91,880	3,33,905
7. Gross earnings of branch per mile per week ..	....	....	....	104·37	....	92
8. Gross earnings of branch per train mile ..	....	....	....	2·49	....	2·18
9. Working expenses of branch (70 × 2510) ..	1,75,700	8,000	....	1,83,700	....	1,83,700
9(*a*) Additional for one goods train each way per day (70 × 900)	....	....	63,000	63,000	56,000	56,000
10. Working expenses per mile per week	....	....	....	67·7	....	65·89
11. Working expenses per train mile	....	....	....	1·6	....	1·56

	By ordinary trade of the area.	By three fourths of Akluj imports and exports.	By six factories.	Total with six factories.	By four factories.	Total with four factories.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
12. Gross earnings of existing lines from new traffic interchanged with the projected line ..	67,900	12,036	2,78,646	3,58,582	1,81,774	2,65,700
13. Percentage of working expenses to gross earnings prevailing on connected existing lines ..	62 per cent.	57 per cent.	62 per cent.	....	62 per cent.	...
14. Working expenses of existing lines for new traffic interchanged with the projected line ..	42,098	6,860	1,72,761	2,21,719	1,15,174	1,64,132
15. *Net earnings of branch* ..	42,700	15,625	74,820	1,33,145	35,880	94,205
16. Net earnings of existing lines from new traffic interchanged with the projected line ..	25,802	5,176	1,05,885	1,36,863	70,590	1,01,568
17. Net income to be credited to projected line ..	68,502	20,801	1,80,705	2,70,008	1,06,470	1,95,773
18. Percentage return on capital cost in 6th year after opening	1·48 per cent.	....	....	5·82 per cent.	....	4·2 per cent.
19. Operating ratio of branch line for traffic worked over branch line only ..	....	....	....	64·9 per cent.	....	71·8 per cent.

TABLE No. IV.

Statement showing import and export trade of Akluj at present taken by bullock cart to nearby railway centres with respective railway haulage charges at long haul main line rates. No credit for interchange is allowed beyond Kurduwadi and Dhond as this traffic already travels beyond Diksal by railway.

TABLE

Statement showing import and export trade of Akluj at present taken by bullock cart to nearby for interchange is allowed beyond Kurduwadi and Dhond as this

Total Akluj trade as obtained locally from merchants.		Via Diksal.							
		Obtained from local sources.	Weight.	75 per cent. to Railway.	Haul on		Rate per mile.	Amount.	
Item.	Quantity.				Proposed line.	D. B. section.		Proposed line.	D. B. section.
1	2	3	4	5	6	7	8	9	10
	Tons.	Tons.	Tons.	Tons.	Miles.	Miles.	Pies.	Rs. a. p.	Rs. a. p.
Imports.									
Salt	286	..	200	150	42*	9*	9·35	306 0 0	65 0 0
Oil cake	2,072	172	400	300	..	..	2·8	184 0 0	39 8 0
Iron and Steel	500	..	250	188	..	..	11·4	468 13 0	100 6 0
Teak wood	240	..	..	..	..	..	....	....	....
Kerosine oil	403	..	403	301	..	..	13·6	895 7 0	192 6 0
Rice	360	260	50	35	..	..	10·33	79 2 0	17 0 0
Cloth and yarn	250	50	100	75	..	..	27·2	446 4 0	95 7 0
Sugar	300‡	..	..	..	..	..	..	....	....
Safflower	1,478	28	400	300	..	..	8·55	561 2 0	120 5 0
Charcoal	50	50	..	..	..	..	..	....	....
Sulphate	136	..	136	102	..	..	2·75	61 6 0	13 2 0
Exports.									
Gul (country sugar) ..	4,950	500	2,160	1,670	..	..	8·55	3,123 0 0	669 0 0
Jowari	2,000	..	1,000	750	..	..	9·36	1,530 0 0	328 0 0
Oil	242	..	121	91	..	..	11·42	227 5 0	48 11 0
Skins	500	..	500	375	..	..	16·86	1,383 0 0	367 12 0
Groundnuts	536	36	250	188	..	..	11·42	469 10 0	107 11 0
Cotton	428	..	428	321	..	..	22·25	1,562 6 0	334 12 0
Cotton seeds	1,607	38	1,000	750	..	..	9·1	1,303 0 0	279 0 0
Various seeds	491								
Wheat	400	400	..	..	..	..	..	....	....
Total ..	..	..	..	5,596	..	..	..	12,826 0 0	2,636 0 0

* Distance from Akluj to Dhond *via* Baramati is 69 miles. After deducting Diksal to Dhond (*via* G. I. P.) 18 miles,

† 28 miles on proposed line. Some Akluj traffic which now goes beyond Pandharpur by cart will travel by

‡ Imports of sugar will cease.

No. IV.

railway centres with respective railway haulage charges at long haul main line rates. No credit traffic already travels beyond Diksal by railway.

Via Pandharpur.					*Via* Kurduwadi.				Assumed distance for calculating rate.
Weight.	75 per cent. to Railway.	Haul.	Rate per mile.	Amount.	Weight	Haul.	Rate per mile.	Amount.	
11	12	13	14	15	16	17	18	19	20
Tons.	Tons.	Miles.	Pies.	Rs. a. p.	Tons.	Miles.	Pies.	Rs. a. p.	Miles.
..	..	..	..	....	86	32 by Barsi Light Railway and 28 by branch line.	9·35	134 0 0	200
..	..	..	..	....	1,500		2·8	701 0 0	350
200	150	28†	11·4	249 6 0	50		11·4	95 0 0	200
..	..	..	..	....	240		9·1	364 0 0	....
..	..	..	..	....	..		..	....	150
..	..	..	..	....	50		10·33	94 7 0	150
50	38	..	27·2	150 12 0	50		27·2	226 10 0	200
..	..	..	..	....	..	....	..	....	....
..	..	..	..	....	1,000	....	8·55	1,425 0 0	350
..	..	..	..	....	..	....	..	....	....
..	..	..	..	....	..	....	..	....	....
1,790	1,343	..	8·55	1,674 8 0	500	....	8·55	712 8 0	350
..	..	..	..	....	1,000	....	9·36	1,560 0 0	200
22	17	..	11·42	42 4 0	99	....	11·42	188 7 0	250
..	..	..	..	....	..	....	..	....	200
..	..	..	..	....	250	....	11·42	475 0 0	150
..	..	..	..	....	..	....	..	....	....
460	345	..	9·1	463 0 0	600	....	9·1	910 0 0	200
..	..	..	..	....	..	....	..	....	....
..	..	..	..	2,579 14 0	5,425	....	..	9,400 0 0	to Barsi Light Railway.
								8,220 0 0	to Branch line.

the total lead gained is 51 miles, *i.e.* 42 miles on the proposed line and 9 miles on D. B. section, respectively.
Barsi Light Railway. An allowance for this is made in the financial prospects statement.

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IV. Akluj-Velapur-Pandharpur Railway Project.

		Rs.
Length	28 miles (approximate).	
Gauge	2'-6"	
Cost per mile including rolling stock and junction arrangements (as estimated by Barsi Light Railway) ..	Rs. 60,000	
Total cost	.. ..	16,80,000
Add for interest during construction ..	.. ..	48,000
		17,28,000

General.

128. (*a*) *Population.*—Take density as for Malsiras Taluka at 114 per square mile. No earnings are taken for the first eight miles out from Pandharpur though small earnings for westward traffic would accrue from this area.

The average distance of the boundary of this area from the proposed line is 6 miles. Total population in the area affected is 250 square miles times 114 = 28,500 persons.

(*b*) *'Buses.*—Ten return trips per day are made between Pandharpur and Malsiras and beyond, and of these two journeys each way are made between Akluj and Pandharpur. For 'bus fares see paragraph 101. The population of Akluj is 6,261 and of its commercially attached suburbs Baura and Sarati approximately 5,000, total say, 11,000.

It is assumed that, although the proposed railway fare of 2½ pies per mile is a little more than half that charged by 'buses, the latter will reduce fares and will take all the local traffic between village and village. Replies to local enquiries place the probable daily number of passengers by rail from Akluj to Pandharpur and beyond at 150 per day. Although Akluj is the most important small town (commercially speaking) in the Nira Right Bank area, it is thought that, allowing for monsoon difficulties for passengers from across the river, not more than 40 passengers per day for Pandharpur and beyond can be relied upon, i.e., 80 return journeys per day of which 15 (merchant class) are taken as journeying an average of 60 miles beyond Pandharpur.

Earnings.

129. (*a*) *Coaching.*—Yearly earnings for III class passenger traffic at 2½ pies per mile would be :—

Station.	On new line to and from Pandharpur.			Interchange i.e. 60 miles beyond Pandharpur.			Mela traffic.		
	No.	Distance.	Amount.	No.	Distance.	Amount.	No.	Distance.	Amount.
			Rs. a. p.			Rs. a. p.			Rs. a. p.
Akluj ..	29,200	28	9,874 7 0	5,475	60	4,273 9 0	2,500	28	845 7 0
Velapur ..	4,000	21	1,013 12 0	50	60	36 9 0	2,500	21	633 7 0
Bhalavani ..	1,000	12	156 4 0	25	60	18 5 0	50	12	7 13 0
Vepri ..	500	8	52 2 0	10	60	7 5 0	..	..	....
Total ..			11,096 9 0			4,335 12 0			1,486 11 0

	Rs.
Grand Total	17,219
Deduct 62 per cent. working expenses on attached line on Rs. 4,335 12 0 for interchanged traffic .	2,874
Net total for local and interchange	14,345
Add for upper class at 1 per cent.	141
Add for additional coaching earnings at Rs. 130 per mile (actuals for G. I. P. 2'-6" gauge lines, 1931-32). .	3,640
Total coaching earnings	18,125

(*b*) *Goods.*—(*i*) *Station to station freight earnings.*—These on the Baramati-Baura project work out to Rs. 1,300 per mile per annum, but on the proposed line, which is only 28 miles long, practically all these will be taken by cart and the most that can be allowed is Rs. 300 per mile.

Earnings per annum for local freight Rs. 8,400.

(*ii*) *Earnings from sugar factories.*—Five sugar factory areas between Velapur and Akluj of which one will be starting production within a year will be tapped by the proposed line.

The respective hauls are as tabulated below :—

Akluj to Diksal.

	Via proposed line.	*Via* Road.
By proposed railway	28	36
By Barsi Light Railway	33	....
By G. I. P. Railway	50	....
Rail equivalent of one transhipment	6	....
	117	36
Ratio ..	3 : 1	

Akluj to Kurduwadi.

By proposed railway	28	....
By Barsi Light Railway	33	....
Rail equivalent of one transhipment	6	32
	67	32
Ratio ..	2·1 : 1	

Sugar and by-products.—Sugar and molasses destined for the north and east will be taken to Diksal and Kurduwadi by cart for the eight months of the year that the Nira and Bhima river fords are passable.

Sugar for Belgaum etc. *via* Pandharpur will travel by the proposed branch. Thus only half the sugar production is shown as transported on the branch.

The railway rate for by-products, fuel, etc. being one tenth that of the lowest recorded cartage rates, these products will use the railway.

Sugar earnings will be as follows for one 400 ton factory.

Item.	Gross earnings.		Total.
	Branch line.	Connected lines.	
	Rs.	Rs.	Rs.
Sugar	6,630	....	....
Molasses	1,500	13,650	....
Oil cake	900	8,678	....
Sulphates	150	1,719	....
Coal	100	4,700	....
Crude oil	700	7,231	....
Stores	400	3,608	....
Total ..	10,380	39,586	49,966
For 5 factories	51,900	1,97,930	2,49,830
For 3 factories	31,140	1,18,758	1,49,898

Earnings from Akluj import and export trade.

130. From enquiries made of Akluj merchants and from the actuals of the Akluj-Pandharpur road octroi returns the following figures are obtained. The products already find their way to the Barsi Light Railway so no additional interchange credit is allowed.

Item.	Quantity in tons.	75 per cent. to railway.	Haul.	Rate per mile.	Amount.
					Rs. a. p.
Iron and steel	200	150	28	3·1	459 6 0
Cotton and yarn	50	38	28	3·1	116 0 0
Country sugar	1,790	1,343	28	3·1	4,112 15 0
Oil	22	17	28	3·1	52 1 0
Various seeds	460	345	28	3·1	1,056 9 0
Total ..	..	..	..	..	9,796 15 0

—	Gross earnings.		Total.
	Coaching.	Goods.	
			Rs.
Branch line	16,364	18,197	34,561
Connected lines	4,636	....	4,636
Total ..	....	....	39,197

Working expenses.

	Rs.
131. (*a*) For ordinary traffic at 2 mixed trains each way per day (*vide* Chap. VIII at Rs. 2,510 per mile)	70,280
(*b*) Additional for one goods train each way per day for working sugar trade on 5 factories at 900 per mile (*vide* Chapter VIII) ..	25,200
(*c*) Additional for one goods train each way per day for working sugar trade with 3 factories at Rs. 800 per mile	22,400

Remarks.

132. From the following table it is seen that there is a loss in working the proposed branch as regards earnings and working expenses thereon including sugar traffic earnings, but that the net earnings on interchanged value of products of five factories turn this loss into a gain giving 3·9 per cent. return on capital cost. Thus the prospects of this line are exceptionally dependent on the sugar trade.

Actually the trifling passenger and local goods traffic allowed in the estimate would not justify 2 mixed and 1 goods train each way per day. Two goods trains each way per day with an odd passenger coach attached or with steam or motor coaches to deal with passenger traffic would meet the operating requirements. Figures in brackets in the statement of financial results allow for this modification. Even with this modification the line is exceptionally dependent on the net earnings of sugar traffic on connected lines.

Financial results.

—	Local traffic.	Sugar traffic on 5 factories.	Total with 5 factories.	Sugar traffic on 3 factories.	Total with 3 factories.
	Rs.	Rs.	Rs.	Rs.	Rs.
1. Length of line .. 28 miles.	....	....	....	....	....
2. Gauge .. 2'-6" ..	....	....	....	....	....
3. Capital cost including junction arrangements, interest on capital and cost of rolling stock ..	17,28,000	....	....	....	....
4. Cost per mile of rolling stock (based on Barsi Light Railway figures)	10,000	....	....	....	....
5. Cost of junction arrangements ..	17,000	....	....	....	....
6. Gross earnings of branch ..	34,561	51,900	86,461	31,140	65,701
7. Gross earnings of branch per mile per week	....	....	59·34	....	45·1
8. Gross earnings of branch per train mile	....	....	1·4	....	1·07
9. Working expenses of branch 28 × 1,579 or 900 .. .. and	(44,214)	(25,200)	(69,414)	(22,400)	(66,614)
28 × 2,510 or 800	70,280	25,200	95,480	22,400	92,680
10. Working expenses of branch per mile per week	....	....	(47·6)	....	(46·1)
11. Working expenses of branch per train mile ..	....	....	(1·1)	....	(1·1)
12. Gross earnings of existing lines from new traffic interchanged with the projected line ..	4,636	1,97,930	2,02,566	1,18,758	1,23,394
13. Percentage of working expenses to gross earnings prevailing on connected existing lines ..	62 per cent.	62 per cent.	62 per cent.	62 per cent.	62 per cent.

	Local traffic.	Sugar traffic on 5 factories.	Total with 5 factories.	Sugar traffic on 3 factories	Total with 3 factories.
	Rs.	Rs.	Rs.	Rs.	Rs.
14. Working expenses of existing lines for new traffic interchanged with the projected line ..	2,874	1,22,716	1,25,590	73,630	76,504
15. *Net earnings of branch*—(6) minus (9)	(minus 9,653) minus 35,719	26,700	(plus 17,047) minus 9,019	8,740	(minus 913) minus 26,978
16. Net earnings of existing lines from new traffic interchanged with the projected line—(12) minus (14)	1,762	75,214	76,976	45,128	46,890
17. Net income to be credited to projected line	(minus 7,891) minus 33,957	1,01,914	(94,023) 67,957	53,868	(45,977) 19,911
18. Percentage return on capital cost in 6th year after opening ..	....	....	(5·4 per cent.) 3·9 per cent.	....	(2·66 per cent.) 1·2 per cent.
19. Operating ratio of branch line for traffic worked over branch line only	....	....	(80·3 per cent.) 110·4 per cent.	....	(101·2 per cent.) 141 per cent.

V. Pandharpur-Lonand Railway Project.

Length as per 1926 project	83 miles.
Length as realigned *via* Akluj	86 miles.
Gauge	2′—6″
Cost per mile according to 1926 estimate	Rs. 97,436
Cost per mile according to present estimate	Rs. 67,272

The project as it stands does not meet the trade requirements of the area as well as do other projects. Various realignments and modification to the project to remove those defects have been investigated.

Realignments.

133. The justification for this line is that it should serve the sugar factory areas. To do this, certain realignments would be necessary :—

(1) A diversion through Akluj.

(2) A diversion of 33 miles at the Lonand end to the north bank of the Canal.

(3) The diversion known as the Pandharpur–Baramati (Right Bank) project to give a northward outlet which has been investigated separately.

Cost of the Line.

134. The cost per mile of 33 miles near Lonand to be diverted will be increased by about Rs. 8,000 per mile. Cost per mile of Pandharpur–Akluj project as from 1933 manuscript estimate of Barsi Light Railway Company including junction arrangements and rolling stock is Rs. 60,000 per mile and excluding junction arrangements it is Rs. 59,400 per mile.

	Rs.
83 miles (1926 project) at 59,400 per mile	49,30,200
3 miles (diversion *via* Akluj) at 59,400 per mile	1,78,200
Additional on 33 miles diverted at 8,000 per mile	2,64,000
Junction arrangements at Pandharpur (Barsi Light Railway figures)	17,000
Junction arrangements at Lonand (estimated)	50,000
Carried forward ..	54,39,400

	Rs.
Brought forward ..	54,39,400

Interest during construction.

To spend during 1st year .. .. .. 14 lakhs.
To spend during 2nd year .. .. .. 30 „
To spend during 3rd year .. .. .. 10 „

At the end of 1st year .. $= \frac{4}{100} \times \frac{14}{2} = 0{\cdot}28$

At the end of 2nd year .. $= 0{\cdot}28 + \frac{4}{100}(14 + \frac{30}{2} + 0{\cdot}28)$

$= 1{\cdot}45$

At the end of 3rd year .. $1{\cdot}45 + \frac{4}{100}(14 + 30 + \frac{10}{2} + 1{\cdot}45)$

$1{\cdot}45 + 2{\cdot}01 = 3{\cdot}46$ ..		3,46,000
		57,85,400
Cost per mile		67,272

Earnings.

135. (*a*) *Coaching.*

	Rs.
These in the 1926 revision of the project at 4 pies per mile were estimated as	4,21,365
The above rate of 4 pies is to be reduced to 2½ pies for all projects investigated in the Nira Valley Area, *vide* paragraph 101. No corresponding increase in numbers is made as such increase is compensated by the decline in traffic due to 'bus traffic etc. since 1926.	
1st revised figure of coaching earnings	2,62,500
2nd revised figure of coaching earnings ..	2,26,782

(*b*) *Goods earnings.*

In the absence of details of rates in the 1926 report no criticism is possible. The earnings for goods must, however, be reduced from Barsi Light Railway rates to main line rates for uniformity (see calculations for Baramati-Baura *via* Indapur project), i.e. by approximately 33 per cent. of 2,17,000	1,44,700

The rates per mile for passenger and goods earnings as above may be compared with those of the Baramati–Baura *via* Indapur project.

Gross earnings.	Coaching.	Goods.	Total.
	Rs.	Rs.	Rs.
Lonand–Pandharpur	3,052	1,682	1,734
Baramati–Baura (also Baramati–Pandharpur *via* Left Bank)	2,100	1,990	4,090

The relatively high figure of Rs. 2,916 per mile for coaching is due largely to pilgrim traffic which represents Rs. 1,239 per mile. In view of 'bus competition the latter figure may be reduced to Rs. 824 per mile, giving Rs. 2,637 per mile for coaching earnings.

The revised figures are :—

Gross earnings.	Coaching.	Goods.	Total.
	Rs.	Rs.	Rs.
Per mile of line	2,637	1,682	4,319
Per 86 miles	2,26,782	1,44,652	3,71,434

On the analogy of the Baramati-Baura (*via* Indapur) figures the above amounts may be split up as under :—

Gross earnings.	Coaching.	Goods.	Total.
	Rs.	Rs.	Rs.
Branch line	2,03,482	92,152	2,95,634
Connected lines	23,300	52,500	75,800
Total ..	2,26,782	1,44,652	3,71,434

Add for three quarters of that part of Akluj trade which at present goes by cart to Kurduwadi and Pandharpur. These have already been tabulated in Table IV (Baramati-Pandharpur *via* Left Bank project). They are :—

——	*Via* Pandharpur.	*Via* Kurduwadi.	Total.
	Rs.	Rs.	Rs.
By branch line	2,580	8,220	10,800
By connected lines	*Nil*	9,400	9,400

Earnings from sugar factories.

136. The proposed line will serve nine factory areas but (allowing for one area on the Nira Left Bank) there is sufficient water to irrigate only 6½ (say 6) 6,000 acre estates with 2,000 acres continuously under cane per estate. Machinery for two of these factories is said to be on order and produce from them may be allowed for from the start with a subsequent increase to six factories in the area served.

Sugar exports to the north *via* Lonand, Poona and Dhond can only be by double transhipment and a circuitous rail journey with an equally circuitous route *via* Pandharpur and Kurduwadi. Thus Nira sugar will be debarred a northern market due to excessive rail charges unless some cross connection by road or rail to Baramati be provided.

In any case such outlet would detract from the earnings of the line and this is taken account of in the sugar earnings estimate below.

Imports.

The imports (manures etc.) come mainly from the south and south-east and 75 per cent. credit is allowed for haulage on these, the balance of 25 per cent. being by cart from Baramati and from local production.

Sugar factory produce for two thirds of sugar and three quarters of by-products :—

Item.	Gross earnings.		Total.
	Branch line.	Connected lines.	
	Rs.	Rs.	Rs.
Sugar	11,050	....	11,050
Molasses	1,174	7,043	8,217
Oil cake. Sulphates. Coal. Crude oil. Stores.	2,114	19,025	(28,186 × ¾) 21,139
Total ..	14,338	26,068	40,406
Total for 4 factories	57,352	1,04,272	1,61,624
Total for 6 factories	86,028	1,56,408	2,42,436

Working expenses.

137. These have already been dealt with in Chapter VIII.

The per mile and total rates are :—

	Per mile.	Per 86 miles.
	Rs.	Rs.
Two mixed trains each way per day	2,510	2,15,860
Additional (dependent) cost for one goods train each way per day for full produce of 6 factories at 900 per mile.	$(\frac{3}{4}\times 900)$ 675	58,050
Additional (dependent) cost for one goods train each way per day for full produce of four factories at 800 ..	$(\frac{3}{4}\times 800)$ 600	51,600

$\frac{3}{4}$ reduction is due to less than full produce of manures etc. allowed in earnings.

Note.—A comparison of Rs. 51,600 under additional working expenses with Rs. 57,352 under earnings shows that it will not pay to run an additional goods train for the part produce of four factories. This traffic must be worked by the daily two mixed trains, working expenses of these being increased by Rs. 32,000 on this account.

Financial Results.

	—	By ordinary trade.	By $\frac{1}{4}$ of Akluj trade.	By 6 sugar factories.	Total with 6 sugar factories.	By 4 sugar factories.	Total with 4 sugar factories.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Length of line	86 miles.	..	..	..	..	..	..
2. Gauge	2'—6"	..	..	..	..	..	..
3. Capital cost including junction arrangements, interest on capital and cost of rolling stock	57,85,400	..	..	..	..	..	..
4. Cost per mile of rolling stock (as estimated by Barsi Light Railway) ..	10,000	..	..	..	..	..	
5. Cost of junction arrangements	67,000	..	..	..	..	..	..
6. Gross earnings of branch ..	..	2,95,634	10,800	86,028	3,92,462	57,352	3,63,786
7. Gross earnings of branch per mile per week ..	..	..	..	..	90	..	81·3
8. Gross earnings of branch per train mile	..	..	..	..	2·1	..	1·93
9. Working expenses of branch	..	2,15,860	5,000	58,050	2,78,910	32,000	2,52,860
10. Working expenses of branch per mile per week ..	..	..	..	..	62·3	..	56·5
11. Working expenses of branch per train mile.. ..	..	..	..	..	1·5	..	1·3
12. Gross earnings of existing lines from new traffic interchanged with the projected line	..	75,800	9,400	1,56,408	2,41,608	1,04,272	1,89,472
13. Percentage of working expenses to gross earnings prevailing on connected existing lines	..	62 per cent.	62 per cent.	62 per cent.	..	62 per cent.	..
14. Working expenses of existing lines for new traffic interchanged with the projected line	..	46,996	5,828	96,973	1,49,797	64,648	1,17,472
15. *Net earnings of branch* ..	..	79,774	5,800	27,978	1,13,552	25,352	1,10,926
16. Net earnings of existing lines from new traffic interchanged with the projected line.	..	28,804	3,572	59,435	91,811	39,624	72,000
17. Net income to be credited to the projected line ..	..	1,08,578	9,372	87,413	2,05,363	64,976	1,82,926
18. Percentage return on capital cost in 6th year after opening	..	1·4 per cent.	..	..	3·6 per cent.	..	3·2 per cent.
19. Operating ratio of branch line for traffic worked over branch line only ..	..	73 per cent.	..	..	71 per cent.	..	70 per cent.

VI. Baramati-Asu-Dharampuri-Nateputa-Malsiras and Pandharpur Project (via Right Bank).

Length .. .. 70 miles (approximately).
Gauge .. .. 2'—6".
Cost per mile including rolling stock, junction arrangements, interest on capital .. .. Rs. 66,221.

General.

138. This alternative has the advantage of serving all but one out of approximately 12 possible factory areas and of providing both north and south outlets. It serves an area further from existing lines than in the case of the Baramati–Pandharpur *via* Left Bank project.

It meets the trade requirements of the area better than either the Baramati–Pandharpur *via* Left Bank or the Lonand–Pandharpur projects. A considerable volume of cross traffic comes to Nateputa from the south and makes its way to Baramati. The proposed line will gain this traffic for 24 miles.

By connecting with the G. I. P. Railway main line *via* Baramati and Dhond at one end, and with the G. I. P. and M. & S. M. *via* the Barsi Light Railway at the other, investigation shows that the greater part of Akluj trade can be captured from the carts in which it travels at present, provided that broad gauge rates are charged on the new 2′—6″ gauge line as well as on the main line. These rates have been followed in the calculations. Road competition by 'buses has been allowed for by reducing coaching earnings by nearly 50 per cent. compared with the 1926 Lonand–Pandharpur project.

Engineering.

139. Rates per mile as already obtained for the following sections have been allowed :—

		Rs.
(*i*) 42 miles from Baramati to Akluj are allowed at the Baramati–Baura rate i.e. 42 miles at 58,225 per mile (including rolling stock) ..		24,47,000
(*ii*) 28 miles from Akluj to Pandharpur are allowed at the rate worked out by the Barsi Light Railway for the Pandharpur–Akluj project (including junction arrangements at Pandharpur and rolling stock) i.e. 28 miles at 60,000 per mile		16,80.000
(*iii*) Nira River Bridge. From a sketch made at the Sarati ford and from data tabulated in Chapter VII, the cost of the bridge is estimated as follows :—		
10 spans of 60′ girders—		
Total length from end to end of wing walls	640′	
Average height from rail level to bottom of founds	52′	
Total side area	33,580 sq. ft.	
	Rs.	
Cost at Rs. 7 per square foot of overall side area	2,35,000	
Add for approach banks	1,000	
	2,36,000	2,36,000
(*iv*) Additional facilities at Dhond and Baramati ..		20,000
		Rs. 43.83,000

(*v*) Interest on capital cost during construction.

Allowing 3 years, the expenditure is taken as—

1st	10,00,000
2nd	20,00,000
3rd	13,83,000

$$\text{After 1st year} = \left(\frac{4}{100} \times \frac{10,00,000}{2}\right) = 20,000$$

$$\text{After 2nd year} = 0{\cdot}2 + \frac{4}{100}\left(10 + \frac{20}{2} + 0{\cdot}2\right)$$

$$= 0{\cdot}2 + 0{\cdot}808 = 1,00,800$$

$$\text{After 3rd year} = 1{\cdot}008 + \frac{4}{100}\left(10{\cdot}0 + 20{\cdot}0 + \frac{13{\cdot}83}{2} + 1{\cdot}008\right)$$

$$= 1{\cdot}008 + \frac{4}{100}(37{\cdot}918)$$

$$= 1{\cdot}008 + 1{\cdot}51672 \qquad 2,52,472$$

(*vi*) Total cost of railway including rolling stock, junction arrangements and interest on capital cost	46,35,472
(*vii*) Total cost of railway including rolling stock, junction arrangements and interest on capital cost per mile	66,221

Commercial.

140. (*a*) *Present trade between Akluj, Baura and Diksal.*—There is no road bridge below Nira over the Nira River and the railway will be the cheapest route. Three quarters of this trade may safely be taken as diverted *via* Dhond and the new line (see map No. 4).

If a road bridge be built subsequently imports from the Bombay direction and exports northwards, all of which must pass through Dhond, will have the alternative routes as under :—

(*i*) *Akluj to Dhond.*

	Via proposed line.	*Via* Diksal.
Rail distance	69	18
Road distance	....	36
Rail equivalent (for sugar) of one transhipment	6	....
	75	54

A reference to distance ratio in paragraph 103 shows that this trade can be captured, but actually only three quarters have been shown as coming to the railway.

To facilitate estimates of earnings from Akluj trade this has been split up and analysed in the form of a tabular statement (table IV above).

(*ii*) *Akluj to Kurduwadi* (for south bound traffic).

		By rail.	By road.
By proposed railway	28		
By Barsi Light Railway	33		
	—	61	....
Rail equivalent of one transhipment ..		6	....
		67	32
Distance ratio ..		2	1

Thus the greater part of the Kurduwadi portion of Akluj trade may be diverted to the railway *via* Pandharpur, the lead being 28 miles on the new line and 33 on the Barsi Light Railway. This will not apply if a road bridge be built over the Bhima River which is unfordable during the monsoon. Owing to uncertainty of capturing this trade only three quarters are taken as coming to the railway.

General coaching and goods earnings.

141. The rates for these will be approximately the same as those worked out for the Lonand-Pandharpur project. These are tabulated below together with revised figures for the Baramati-Pandharpur *via* Left Bank project for comparison :—

Gross earnings.	Coaching.	Goods.	Total.
	Rs.	Rs.	Rs.
Baramati-Pandharpur *via* Left Bank per mile per annum.	2,100	1,990	4,090
Pandharpur-Lonand per mile per annum	2,637·2	1,682	4,319
Do. per 70 miles	1,84,609	1,17,740	3,02,349
Cross traffic 28 miles, Nateputa to Dhond and Diksal ..	*Nil*	15,699	15,699

The above figures include an addition for earnings due to cross traffic on goods only which, originating in the area south of the railway around Dahivadi, at present passes from Nateputa to Baramati, Dhond and Diksal by country carts fording the river. The haul on the proposed branch will be 28 miles and the gross earnings may be taken as approximately an additional one third (i.e. one quarter of the whole) on these 28 miles plus a proportion for earnings on connected lines. The totals are given in the tables.

	Coaching.	Goods.	Total.
	Rs.	Rs.	Rs.
Total earnings	1,84,609	1,33,439	3,18,048
Earnings per mile including Nateputa cross traffic ..	2,637	1,906	4,543

These earnings are to be divided approximately in the ratio of 3 : 1 between the branch and connected lines respectively (the ratio found for the

Baramati-Baura *via* Indapur project) and to these again, are to be added the earnings of three quarters of Akluj trade as worked out in the Left Bank project.

Total earnings.	To branch line.	To connected line.	Total.
	Rs.	Rs.	Rs.
General trade and cross traffic	2,38,536	79,512	3,18,048
Three fourths of Akluj imports and exports	23,625	12,036	35,661
Total ..	2,62,161	91,548	3,53,709

Sugar traffic.

142. For one 400 ton factory the gross earnings are as follows :—

	Gross earnings.		Total.
	Branch line (35 miles).	Connected lines.	
			Rs.
Sugar	16,575	....	
Molasses	3,595	21,055	
Manures	1,000	8,578	
Sulphates	700	1,669	
Fuel (coal)	100	4,700	
Crude oil	500	6,931	
Miscellaneous stores	500	3,508	
Total ..	22,970	46,441	69,411

143. The branch serves eleven possible factory areas, of which two have been taken up. The one factory site (near Phaltan) not served has been taken up and the water available is sufficient for $7\frac{1}{2}$ areas only. Thus $6\frac{1}{2}$ (say 6) of the sites served may eventually be developed for factories.

The *gross earnings* for these six factory areas are :—

		Rs.
Branch line	6 × 22,970	1,37,820
Connected lines	6 × 46,441	2,78,646

Working expenses.

The figure of Rs. 2,510 per mile worked out for the two mixed trains each way for the Baramati-Baura *via* Indapur project will suffice for all general traffic. An addition of Rs. 15,000 for the whole line is made on account of Akluj and Nateputa trade. To deal with the sugar traffic one additional train each way will be required and the dependent cost of these trains (*vide* Chapter VIII) would be Rs. 622 per mile.

This figure of Rs. 622 takes no account of extra siding accommodation, goods sheds, etc., which the introduction of heavy goods traffic would necessitate. As given in Chapter VIII the corresponding figure of extras for two goods train is equal to 2×450 = Rs. 900 per mile = Rs. 63,000 for the line.

Earnings with four sugar factories in place of six.

144. In the event of only 4 factories being taken up the gross earnings for sugar and by-products transportation would be :—

		Rs.
(*a*) Branch line	4 × 22,970	91,880
(*b*) Connected lines	4 × 46,441	1,85,764

Working expenses.

(*a*) On ordinary traffic at Rs. 2,510 per mile	1,75,700
(*b*) Additional on reduced quantities of sugar as above at approximately Rs. 800 per mile	56,000

The resulting figures are shown in the table of financial results.

Financial Results.

		By ordinary trade of area.	By 6 sugar factories.	Total with six factories.	By 4 sugar factories.	Total with four factories.
		Rs.	Rs.	Rs.	Rs.	Rs.
1. Length of line	70 miles.					
2. Gauge	2'-6"					
	Rs.					
3. Capital cost including junction arrangements, interest on capital and cost of rolling stock	46,35,472					
4. Cost per mile of rolling stock (as estimated by Barsi Light Railway)	10,000					
5. Cost of junction arrangements	37,000					
6. Gross earnings of branch		2,62,161	1,37,820	3,99,981	91,880	3,54,041
7. Gross earnings of branch per mile per week		....	....	109·9	....	97·2
8. Gross earnings of branch per train mile		....	....	2·6	....	2·3
9. Working expenses of branch 70 × 22,510 *plus* 15,000		1,90,700	63,000	2,53,700	56,000	2,46,700
10. Working expenses of branch per mile per week		....	....	69·7	....	67·8
11. Working expenses of branch per train mile		....	....	1·65	....	1·6
12. Gross earnings of existing lines from new traffic interchanged with the projected line		91,548	2,78,646	3,70,194	1,85,704	2,77,312
13. Percentage of working expenses to gross earnings prevailing on connected existing lines		62 per cent.	....	62 per cent.	....	62 per cent.
14. Working expenses of existing lines for new traffic interchanged with the projected line		56,760	1,72,761	2,29,521	1,15,174	1,71,934
15. *Net earnings of branch*—(6) minus (9)		71,461	74,820	1,46,281	35,880	1,07,341
16. Net earnings of existing lines from new traffic interchanged with the projected line—(12) minus (14)		34,788	1,05,885	1,40,673	70,590	1,05,378
17. Net income to be credited to projected line		1,06,249	1,80,705	2,86,954	1,06,470	2,12,719
18. Percentage return on capital cost in 6th year after opening to traffic		2·3 per cent.	....	6·2 per cent.	....	4·6 per cent.
19. Operating ratio of branch line for traffic worked over branch line only		72·7 per cent.	....	63·4 per cent.	....	69·6 per cent.

CHAPTER X.

Financial Results of Broad Gauge Railway Project.

VII. Kurduwadi-Akluj-Malsiras-Nateputa-Dharampuri-Gunawra Project.

Gauge	5'-6"
Length	64 miles.
Total capital cost of line including cost of junction arrangements, cost of rolling stock and interest on capital	Rs. 63,08,400
Capital cost per mile	98,570

Introductory.

145. This broad gauge project would serve a large number of sugar factory areas without the disadvantage of transhipment.

Gunawra (factory area No. 2) has been chosen as the terminus because factory No. 1 (see map No. 2) can most conveniently and economically be served by road. No. 1 area will be provided with suitable feeder roads to the M. & S. M. Railway at Lonand and the Dhond-Baramati section at Baramati. If subsequently it were decided to complete a railway connection from Dharampuri to Baramati, the section from Dharampuri to Gunawra would remain in as a siding.

Engineering.

146. The only obstacle of importance is the Bhima river which is to be crossed near Sangam below the junction with the Nira. A reconnaisance of this site

indicates that a high level bridge over 1,000 feet long with approach banks or viaducts totalling 900 feet in length would be required. The existing bridges for the Barsi Light Railway 2-'6" gauge over the same river some 30 miles lower down is 1,650' long and 66 feet high and would cost at present day rates about Rs. 8,67,000 (the cost in 1914 was Rs. 5,78,000). Thus a broad gauge bridge at Sangam would cost about Rs. 11,00,000.

Commercial.

147. *Sugar.*—The proposed line would serve eight sugar factory areas out of twelve but out of the balance of four in areas not served by the proposed line, machinery for two is said to have been ordered. Thus there will be water available only for about 11,000 acres of cane in the area served, namely 5½ 400 ton factories (or 5½ 6,000 acres estates). Also with the roundabout route *via* Kurduwadi to Dhond and the north there may be some leakage for sugar exports by road to Diksal. This is all the more probable as, in order to give a northern outlet to the factory area between Lonand and Phaltan and in the interests of development of the area, the Phaltan–Baramati Road will probably be reconditioned. On the other hand, owing to preference among manufacturers for a broad gauge line, it is probable that, with economies in water supply the 5½ sugar factory areas mentioned above would become the equivalent of six.

The relative leads are as follows:—

	Distance from Dharampuri to Dhond.		
	Via proposed line and Kurduwadi.	*Via* Diksal.	*Via* Baramati D. B. Railway.
By rail	56 plus 67	16	27
By road	....	50	32
One transhipment	....	....	6
	123	16 rail 50 road	33 rail and 32 road.

A reference to distance ratios in paragraph 103 shows that the northward export of sugar cannot be relied on. Thus only two thirds of the sugar manufactured is taken as travelling by the new lines. On the other hand three quarters of the sugar manufacture imports are likely to use the new line, Kurduwadi being on the direct route for the greater part of these. Some allowance has been made in comparison with 2'-6" gauge lines due to the absence of transhipment on "*via* Kurduwadi" traffic. The sugar traffic earnings are estimated as follows:—

Earnings due to sugar traffic.

	Due to six factories. Rs.
Branch line	1,10,000
Connected lines	1,96,000
Total ..	3,06,000

General merchandise and passenger traffic.—The earnings due to general goods can be taken as the same per mile as obtained for the Pandharpur–Lonand project with a 10 per cent. addition due to reduction in the transhipment nuisance, *i.e.*

Gross earnings.	Coaching.	Goods.	Total.
Per mile Branch line	2,03,482 86 = 2,366	102,952 86 = 1,200	306,434 86 = 3,563
Connected lines	23,300 86 = 271	61,900 86 = 720	85,200 86 = 990
Total for 64 miles plus 10 per cent. Branch line	1,51,424 15,142	76,800 7,680	2,28,224 22,822
Total ..	1,66,566	84,480	2,51,046
Connected lines	17,384 1,738	46,080 4,608	63,464 6,346
Total ..	19,122	50,688	69,810

Abstract cost of Railway.

148.

Head of Account.	Rate per mile.
I. *Structural Engineering Works.*	
	Rs.
(1) Preliminary expenses	900
(2) Land	4,000
(3) Formation	20,000
(4) Bridge work—	
(*a*) Major bridges	17,187
(*b*) Minor bridges	2,000
(5) Fencing and road crossings	500
(7) Ballast and permanent way—	
(*a*) Main line	
(*b*) Sidings	31,000
(*c*) Points and crossings	
(8) Stations and buildings, etc.	3,000
(10) Plant construction (included in 4 (*a*) above)	....
II. *Equipment.*	
(1) Plant engineering	200
(2) Station and office furniture	200
(3) Rolling stock	10,000
IV. *General charges.*	
(1) Salaries and allowances	4,000
(2) Office expenses	400
(3) Residential quarters	750
(4) Instruments	150
	94,287
Total cost of line	60,34,400
Add for—	
Interest during construction	1,90,000 (approximate).
Rolling stock	64,000
Junction arrangements	20,000
	63,08,400

Working expenses.

149. Working expenses for broad gauge lines have been given at the end of Chapter VIII, i.e. for two mixed trains each way per day at Rs. 5,100 per mile.

Financial Results.

		By local traffic.	By earnings of 6 sugar factories.	Total
1.	Length of line	64 miles.	Rs.	Rs.
2.	Gauge	5'-6"		
3.	Capital cost including junction arrangements interest on capital and cost of rolling stock .	63,08,400		
4.	Cost per mile of rolling stock (as estimated by Barsi Light Railway)	10,000		
5.	Cost of junction arrangements	20,000		
6.	Gross earnings of branch		2,51,046	1,10,000	3,61,046
7.	Gross earnings of branch per mile per week ..		75·7	....	108·5
8.	Gross earnings of branch per train mile ..		2·7	....	3·8
9.	Working expenses of branch		....	....	3,26,400
10.	Working expenses of branch per mile per week		....	....	98·1
11.	Working expenses of branch per train mile ..		....	....	3·5
12.	Gross earnings of existing lines from new traffic interchanged with the projected line ..		69,810	1,96,000	2,65,810
13.	Percentage of working expenses to gross earnings prevailing on connected existing lines		62 per cent.	62 per cent.	62 per cent.
14.	Working expenses of existing lines for new traffic interchanged with the projected line.		43,282	1,21,520	1,64,801
15.	*Net earnings of branch*		....	....	34,646
16.	Net earnings of existing lines from new traffic interchanged with the projected line		26,528	74,480	1,01,008
17.	Net income to be credited to the projected line .		....	....	1,35,654
18.	Percentage return on capital cost in 6th year after opening		....	....	2·15 per cent.
19.	Operating ratio of branch line tor traffic worked over branch line only		....	....	90 per cent.

VIII. Kurduwadi-Akluj-Dharampuri-Baramati-Dhond Project.

Length	101 miles.
Gauge	5′-6″
Cost	Rs. 92,75,000
Cost per mile	Rs. 92,000

Introductory.

150. This project has been suggested as meeting the needs of the area and eliminating the disadvantages of transhipment. It involves an eleven lakh bridge over the River Bhima, Rs. 3,20,000 bridge over the Nira River and the dismantling of the present Baramati-Dhond 2′-6″ gauge railway.

Engineering.

151. The portion of the route as far as Dharampuri is dealt with in the Kurduwadi-Gunawra 5′-6″ gauge project. The cost of the portion of the proposed line from Baramati to Dhond may be taken as Rs. 65,000 per mile after allowing credits for 2′-6″ gauge railway materials released. The maximum curvature on the Dhond-Baramati Railway is 10°, thus the same alignment cannot everywhere be followed. All bridges will be rebuilt. The cost of the line is estimated as follows :—

From and to	Rate per mile.	Distance.	Amount.
	Rs.	Miles.	Rs.
Kurduwadi to Nira River crossing near Asu including cost of Bhima River bridge	93,000	66	61,33,000
Nira River bridge near Asu	....	....	3,20,000
Asu to Baramati	77,000	8	6,16,000
Baramati to Dhond	65,000	27	17,56,000
Total ..	....	101	88,25,000
to which must be added the cost of rolling stock, junction arrangements and interest on capital during construction, thereby bringing the total cost to about	....	....	92,75,000

Commercial.

152. The commercial aspects of the case are those worked for the Baramati-Pandharpur (*via* Right Bank) project except that the absence of any transhipment will lead to some additional trade which cannot accurately be estimated. Also the conversion of the Dhond-Baramati Railway to broad gauge would lead to the recapture of the Baramati-Diksal traffic which has gone to carts, mainly due to local dislike of transhipment.

Gross earnings per mile per annum.

	As worked out for the Baramati-Pandharpur Right Bank project.	As accepted for the proposed line.
	Rs.	
(*a*) 1 to 3 years after opening to traffic ..	4,780	*Add* 10 per cent. to 4,780 = 5,228.
(*b*) 3 to 5 years after opening to traffic ..	7,360	*Add* 10 per cent. to 7,360 = 8,096.

Working expenses.

153. These (as given in Chapter VIII) will be approximately Rs. 5,100 per mile.

Total working expenses = Rs. 5,15,100.

154. *Financial results of working.*

	1 to 3 years after opening to traffic.	3 to 4 years after opening to traffic.
	Rs.	Rs.
(1) Gross earnings at Rs. 5,258 and Rs. 8,096 per mile respectively	5,31,058	8,17,696
(2) Working expenses at Rs. 5,100 per mile and Rs. 5,300 per mile respectively ..	5,15,100	5,35,300
Net earnings ..	15,958	2,82,396

Summary of Financial Results.

	Per cent.
(1) Percentage of net earnings to capital cost 1 to 3 years after opening	0·2
(2) Percentage of net earnings to capital cost 3 to 5 years after opening	3·0
	Rs.
(1) Gross earnings per mile per annum 1 to 3 years after opening ..	5,258
(2) Gross earnings per mile per annum 3 to 5 years after opening ..	8,096

Note.—Owing to lack of time it has not been possible to recast the above preliminary estimate according to standard forms.

IX. Akluj-Diksal Project.

Gauge	5′-6″
Length	36 miles.

155. This alternative has been suggested by commercial interests as a convenience to the area.

It has the advantage of forming a convenient route (without the disadvantage of transhipment) for Akluj imports (most of which come from the north) and of providing a northward outlet for sugar.

The disadvantages are :—

Engineering.

The route between Diksal and Indapur crosses the natural drainage line of the country, thereby necessitating an exceptional number of bridges, the cost of which—based on the existing road bridges—amounts to Rs. 4.85,000 in 20 miles and to Rs. 6,45,000 for the 36 miles to Akluj. In addition to this, the bridge over the Nira river would cost a further Rs. 3,20,000 making Rs. 9,65,000 for bridging only.

Commercial.

There is a parallel metalled road in existence for the whole distance, on which run 'buses and a highly developed cartage system. The limited character of the outlet, i.e. to the north only, renders it unsuitable for importation of natural and artificial manures most of which come from a south-easterly direction.

Finally, although such a connection has certain advantages, all these would be better met by the alternative broad gauge line connecting Kurduwadi to Akluj and continuing to Gunawra (between Dharampuri and Phaltan).

It is not proposed to investigate the Akluj-Diksal project further as it would certainly not give an adequate return on capital and it would not meet the general requirements of the area.

X. Kurduwadi-Lonand Project.

		Rs.
Length	88 miles.	
Gauge	5′-6″	
Approximate cost per mile (see detail for Kurduwadi-Gunawra project)		90,000
Total cost		80,00,000

156. This project has been suggested by owners of sugar factories estates who would benefit by its construction. In addition to the merits and defects of

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MAP No. 4

SCALE 8 MILES = 1"

the portion of this project already worked out as the Kurduwadi-Gunawra Project the proposed line has the following defects :—

The 24 miles from Gunawra to Lonand serve only one additional sugar factory area and this area is already so near Lonand (13 miles) that it would be absurd to rail merchandise this short distance and then tranship to meter gauge. There would be some traffic in manures from Kurduwadi but this is doubtful as probably the owners of the factory in question would arrange to book manures *via* the M. & S. M. railway in order to obtain a return load in their carts and lorries taking sugar to Lonand, or *via* G.I.P. to Baramati whither it is probable an improved road will be built.

The possibility of the erection of an oil factory in Phaltan State is rumoured. If this be so, then the promoters would be better advised to await the completion of whatever railways (if any) may be decided upon before selecting a site for such a factory.

The financial prospects of this project are poor, and being worse than those of the Kurduwadi-Gunawra project, are not worked out.

CHAPTER XI.

RECOMMENDATIONS.

Summary of investigation of railway projects.

157. A study of the financial results of the ten railway projects investigated in the foregoing pages (see Table No. V below) shows that the best three projects in order of merit are :—

(1) Baramati-Pandharpur *via* Right Bank.

(2) Baramati-Pandharpur *via* Left Bank.

(3) Akluj-Pandharpur.

TABLE V.

Statement showing the capital cost, and return on capital cost in the 6th year after opening to traffic of the various projects investigated in the Nira Valley Area.

Name of project.	Length.	Capital cost.	Percentage return on capital cost.						
			By ordinary trade.	With sugar factories served by branch.					
				One.	Two.	Three.	Four.	Five.	Six.
A. Narrow gauge.	Miles.	Rs.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1. Baramati-Baura *via* Indapur ..	42	25,55,450	1·62	..	..	..	..	..	..
2. Baramati-Baura *via* Shetphal ..	36	21,96,000	1·62	2·6	..	..	..	..	..
3. Baramati-Pandharpur *via* Left Bank	70	46,35,472	1·48	..	..	..	4·2	..	5·82
4. Akluj-Pandharpur	28	17,28,000	*Nil.*	..	..	(*2·66)	..	(5·42)	..
				..	..	1·2	..	3·9	..
5. Pandharpur-Lonand ..	86	57,85,400	1·42	..	..	..	3·2	..	3·6
6. Baramati-Pandharpur *via* Right Bank	70	46,35,472	2·3	..	..	..	4·6	..	6·2
B. Broad Gauge.									
7. Kurduwadi-Dharampuri-Gunawra	64	63,08,400	..	..	..	..	..	..	2·15
8. Kurduwadi-Baramati-Dhond ..	101	92,75,000	..	..	..	..	..	..	3
		*For bracketted figures, see paragraph 132.							

The Pandharpur-Lonand project, of which the estimated return is 3·6 per cent., is in fact a sounder financial proposition than the Akluj-Pandharpur project with 5·4 per cent. for reasons given in paragraph 132.

A further study of table V shows that the financial results are given in every case for either 6 (or 5), or 4 (or 3), as the case may be, sugar factories depending upon the areas served. In estimating the net earnings due to the ordinary trade of the area very conservative figures have been taken (Chapter VII), while on the

other hand working expenses (Chapter VIII) have, if anything, been over-estimated. For example the net earnings of the Baramati-Baura (*via* Indapur) project on the ordinary trade of the area show a yield of 1·62 per cent. which may be compared with the figure of 5·08 per cent. estimated for this project in 1928, consequently the higher figures of percentages given in the table may be taken as a more correct indication of the probable earnings. The question of the prospects of the sugar industry has been dealt with in detail in paragraph 98 and it has been shown that although the prospects are good, some fluctuation is to be expected as conditions of trade vary and as competition with 'buses becomes more intense.

Recommendations.

158. The Baramati-Pandharpur (*via* Right Bank) project not only yields the best financial prospects but also serves the ordinary trade requirements of the Nira Valley better than do any of the alternative projects. One consequence of this is that this project is less dependent upon the earnings of sugar factories than is any other. There are, however, certain disadvantages, for example, the wheel gauge of Barsi Light Railway stock is 2′–3¼″ compared with the Standard Dimension of 2′–3½″. On the other hand the Barsi Light Railway maximum clearance of check rail opposite nose of crossing is 1¾″ against the Standard Dimension of 1 1/16″. From these figures it appears that Barsi Light Railway stock may run with safety over the Dhond-Baramati track with a prospect of increased abrasion at check rails while on the other hand Dhond-Baramati stock running on Barsi Light Railway track would be inclined to strike the nose of the crossing.

The alignment of the proposed line (see map 4) has not been thoroughly reconnoitred where it is shown crossing the river Nira and it is not certain that a satisfactory bridge site can be found there. A diversion, as shown dotted, might be found preferable, including a bridge over the Karha river estimated to cost about 1½ lakhs. These are among the points which will have to be investigated at the time of preparing the detailed engineering survey and traffic estimate.

A suggestion was made to us that a 5′–6″ gauge line should be built from Kurduwadi to Dhond more or less on the route of the recommended line. Investigations (paragraph 151) have shown that for financial reasons this project is and similar 5′–6″ gauge projects are quite out of the question, while metre gauge is ruled out partly owing to increase in the transhipment nuisance and partly owing to costs.

Guarantee.

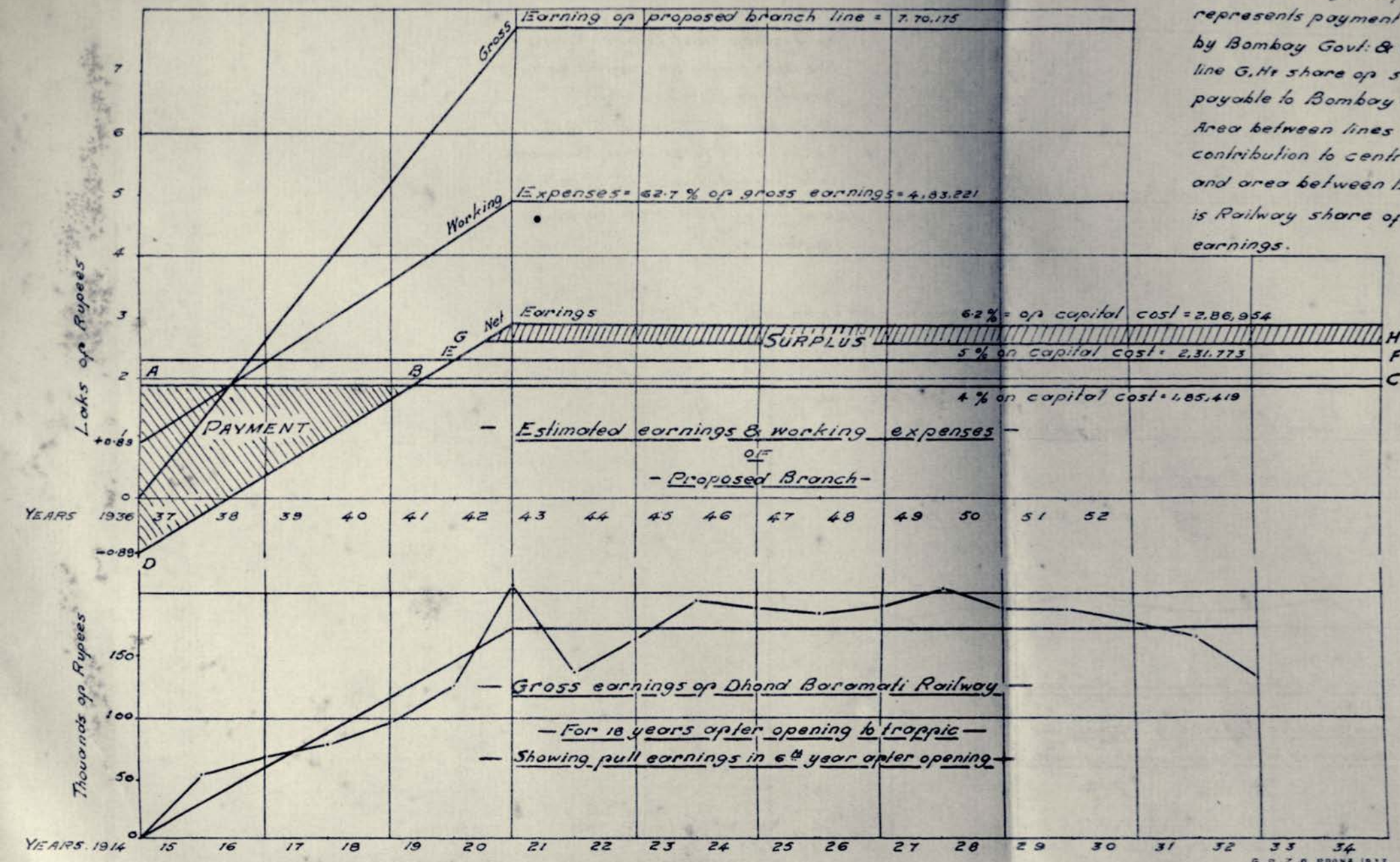
159. Assuming that our recommendations in favour of the construction of the Baramati-Pandharpur (*via* Right Bank) branch line railway are to be accepted together with the construction of such feeder roads as are recommended in this report, it is considered essential that the railway administration be protected from risk of loss due to duplication of facilities such, for example, as road bridges over the Bhima and Nira rivers on roads which would become competitive with the proposed railway. It is suggested that this protection be afforded in the form of a guarantee by the Bombay Government of a net return on the capital cost of the railway.

Taking for example, the figure of 4 per cent. as the guaranteed return, it is seen from graph No. 2 that if the proposed line be opened to traffic in the spring of 1937, by the spring of 1941, net earnings would amount to 4 per cent. on the capital cost, and that by the spring of 1943 the line should have reached its full capacity of 6·2 per cent. For the sake of this example earnings represented by the difference between 4 per cent. and 5 per cent. are taken as payable to the railway administration (as contribution to central revenues) and anything above that figure as equally divided between the railway administration and the Bombay Government. Thus the amount of guarantee to be made good between 1937 and 1941 would be Rs. 5,76,000 and roughly 11 years of net earnings at 6·2 per cent. would be required to pay back this sum. But as only half the difference between 5 per cent. and 6·2 per cent. would go to the Bombay Government, 22 years would pass, or say 24 years allowing for interest, before the share of railway earnings due to the Bombay Government would exceed the payments made by them on account of guarantee.

GRAPH No 2

SHOWING PROBABLE PAYMENTS & RECOVERIES OF GUARANTEE ON THE PROPOSED BRANCH

(By analogy with actuals of Dhond Baramati Railway)



Explanation.

Triangular portion A.B.D represents payment on guarantee by Bombay Govt: & area above line G.H: share on surplus earnings payable to Bombay Govt:

Area between lines B,C, & E.F, is contribution to central Revenues and area between E, F & G.H. is Railway share on surplus earnings.

G.P.Z.O. POONA, 1933.

Recommendations for roads.

160. In addition to the railway which has been recommended as being the chief necessity for the area, the general system of communications would not be complete, particularly in respect of the encouragement of sugar factories, without certain road connections. These recommendations are given below.

Phaltan-Baramati Road.

161. We consider that this road should be completed throughout its length. The urgency for this connection is great. We have already stated that a large portion of the trade of Phaltan—we were informed by a State Official it was as much as 60 per cent. of the whole—is with Baramati. That being so, the sugar factory now in course of erection and the probability of another in the State indicates an even greater urgency in the matter. This road will be an important feeder to the Dhond-Baramati railway.

The cost has been roughly estimated to be Rs. 5,00,000 (paragraph 80 above), and the work could, if funds be available, be started a year hence.

Akluj-Sangam Road.

162. This road is at present maintained by the District Local Board, Sholapur, and is used by traffic in the dry season proceeding to Kurduwadi, and also to some extent by pilgrims to the Narsingpur temple at the confluence of the rivers Bhima and Nira. It passes through the factory area of the Saswad Mali Sugar Co. Ltd., and requires improvement for the traffic to be introduced. It will also be the only connection with the proposed railway at Akluj for a factory situated at the tail of the Branch I of the Nira Right Bank Canal. We consider therefore that the road should be improved by consolidating a 3 inch layer of metal throughout and providing causeways across all nalas.

The cost for the 11 miles concerned would amount to about Rs. 35,750 if taken right up to the river Bhima, but this might not be necessary—certainly not until a factory is to be definitely established in the tail area.

Lonand-Phaltan Road.

163. The Phaltan Sugar Works Ltd. (factory area No. 1, map 4) is naturally anxious to have railway communication especially if it were to pass through the irrigated areas lying between the canal and the river. We were informed that it would be utilised for bringing cane to the factory in excess of what can be grown in the factory area proper. We have come to the conclusion that it would not be profitable to extend the railway to Lonand. We however consider that it will be necessary for the Government of Bombay to allow more for the maintenance of the Lonand-Phaltan Road in order to support the extra traffic, and this road together with that from Phaltan to Baramati should, we think, provide the essential communications for the factory. The Divisional Road Board Committee have suggested an annual grant of Rs. 500 per mile and we think this amount is the least that will suffice.

Nira Left Bank.

164. There is only one factory area possible on this canal because the existing high development of irrigation, especially cane, precludes the possibility of getting more water down the canal. The most suitable area near Lasurna (No. 7) has been prospected by Messrs. Dahanukar and Co. but our most recent information is that this factory is to be started by Mr. Walchand Hirachand, President of the Maharashtra Chamber of Commerce. In a letter to us Mr. Hirachand naturally suggested the extension of the Dhond-Baramati line to Bavda, which would pass through the area he proposes to take up. For the benefit of the valley as a whole an extension on the other side of the river as already recommended would be preferable, and together with the fact that Mr. Hirachand states that if the construction of a railway be delayed, he proposes to lay a light track to Baramati, we do not make any further recommendation in the matter. The main road from Baramati to Indapur passes through the area.

Our recommendations have been based on an assumption that the construction of a submersible bridge over the river Karha in Baramati was to be started this year. We now find that funds for this work have not been allotted, and we should like to point out that the completion of this work is an essential link in the recommended communication system.

165. The minimum net cost of these roads facilities is as follows :—

Capital expenditure.

	Rs.
On Phaltan-Baramati Road	5,00,000
Submersible bridge at Baramati	40,000
On Akluj-Sangam Road	35,750
Total ..	5,75,750

Annual charges.

Interest charge on above amount at 4 per cent.	23,030
Repairs to Phaltan-Sangvi Road at Rs. 900 per mile (additional) ..	3,000
Repairs to Sangvi-Baramati Road at Rs. 500 *minus* Rs. 355 per mile	1,160
Repairs to Lonand-Phaltan Road at Rs. (500–399) ..	1,600
Repairs to Akluj-Sangam Road at Rs. 500 (additional) ..	5,500
Total annual ..	34,290

Canal Service roads.

166. Enquiries have already been made by the Saswad Mali Sugar Co. about the use of existing roads for the purpose of tramlines. While it would obviously be impossible to allow such trams to run on the metalled surface of any road, there is in our opinion no great objection to the use of the berms and space available within the road boundaries, subject to some form of agreement. Similarly, although the canal service roads could not be used for either trams or vehicles generally, we suggest that the space available within the canal boundaries and not required for a service road would prove very useful links between factories and the cane fields for tram lines to convey manure, cane etc., or even for sidings to the railway. We therefore recommend this concession for the consideration of the Government of Bombay.

Maintenance of the Mahad-Pandharpur Road by the Irrigation Department.

167. We ascertained during our enquiry that the roads within the Pandharpur taluka had been transferred to the Roads and Buildings Department in 1930. Of these roads we recommend consideration of retransferring the Mahad-Pandharpur Road to the Irrigation Department so far as concerns that portion within the jurisdiction of the Nira Right Bank Canal Division. This road passes through four important factory areas and it is thought that in view of sugar factory development there would be an advantage in the Irrigation Department maintaining it as used to be the case. The proposal merely brings this road into line with other important roads in the Nira Valley (except the Phaltan-Sangvi and Malsiras-Akluj-Sangam Roads) which are maintained by that Department, a policy which now prevails for practically all roads within the irrigated tracts of the major canals.

Motor transport by railways.

168. We have considered the suggestion for railways to run their own motor transport services, but do not consider this should be necessary. Moreover it would involve more rules and regulations, and the granting of a monopoly would not be popular. Bearing upon this matter, the Maharashtra Chamber of Commerce are definitely against such a system, and are of the opinion that such motor services should be run in the ordinary way under the usual control but that that control should be better than is the case at present. With this we are inclined to agree.

Coordination of proposals.

169. The demands for road improvements have been carefully considered, but it is naturally unreasonable to recommend a railway in one paragraph and in another to suggest an all-weather through road running parallel to or short-circuiting that railway. We have therefore confined ourselves strictly to coordinating the essential needs of the area, both road and rail, the main object in view being to give access to the west (Bombay), the north (Khandesh), and the south and southeast (Nizam's Dominions, Kolhapur, and beyond).

Road works already contemplated.

170. We assume that Government are already committed to certain works as given in the Priority List of Communication Works. We suggest that the works which have been proposed *other than those recommended in this report* should be completely revised by a committee representative of the Roads and Buildings Department, the Irrigation Department, the Revenue Department and others concerned. It would also be desirable that the Railway Officer appointed for the final survey of the recommended railway should be on this committee, as an important factor to be taken up would be sidings or other approaches to factories.

Urgency.

171. Before concluding, we should like to emphasise the necessity of completing the works required as soon as possible. It has already been stated that factories have not been started because of the paucity of communications—one firm shelved a project nearly two years ago. We understand promoters of sugar companies have gone to the United Provinces rather than commence manufacture in the Nira Valley. Lastly, factories are springing up so rapidly and absorbing available capital elsewhere in India, that this area, among the finest in India for growing cane, might conceivably remain undeveloped. We have in this report stated the case in full and have endeavoured to put forward a scheme which not only meets the general demand but which can be taken up in the immediate future. Certain formalities and due consideration will of course take time, but we would most earnestly suggest that no time be lost in arriving at a decision and putting it into effect.

Summary of recommendations.

172. Our recommendations may be summarised briefly :—

(1) Construction of a 2′-6″ gauge railway from Baramati passing through (or near) Asu, Dharampuri, Nateputa, Malsiras, Akluj and Velapur to Pandharpur.

(2) Construction and completion of the road from Phaltan to Baramati station.

(3) Improvement of the road from Akluj to Sangam.

(4) Increased maintenance grant for the road from Lonand to Phaltan.

(5) Speedy consideration and carrying out of the proposals.

(Signed) R. O. C. THOMSON,
Assoc.M.Inst.C.E.,
Executive Engineer,
Indian State Railways,
on Special Duty.

(Signed) W. A. EVERSHED,
B.Sc., M.Inst.C.E.,
Executive Engineer,
Public Works Department,
Bombay,
on Special Duty.

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REPORT

OF THE

COMMITTEE APPOINTED BY THE GOVERNMENT OF BOMBAY TO CONSIDER AND REPORT ON THE QUESTION OF THE INTRODUCTION OF FREE AND COMPULSORY PRIMARY EDUCATION INTO THE BOMBAY PRESIDENCY.

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CHAPTER I.

INTRODUCTION.

1. Appointment of the Committee.

In a Press Note No. 3319, dated 15th July, 1921, the Government of Bombay stated that the question of introducing free and compulsory education both in Municipal and rural areas had been under their consideration for some time. "While educated public opinion is strongly in favour of compulsion and there is a growing popular demand for primary education, it is necessary to determine how far the vast population of this Presidency, especially in rural areas will accept compulsion being applied to them. The provision of the necessary funds for compulsory education and the creation of the necessary machinery for enforcing compulsion also demand careful investigation."

Government, therefore, appointed a Committee consisting of the following members to consider the whole question of the introduction of free and compulsory education throughout the Presidency, excluding Bombay City:—

1. The Honourable Sir Narayan G. Chandavarkar, Kt., LL.D., President, Legislative Council. Chairman.
2. Mr. F. G. Pratt, I. C. S., M.L.C.
3. Rao Bahadur G. K. Chitale, M.L.C.
4. Mr. P. R. Chikodi, M.L.C.
5. Mr. D D. Gholap, M.L.C.
6. Mr. Cowasji Jehangir (Jr.), M.L.C.
7. Mr. B. G. Pahalajani, M.L.C.
8. Mr. C. M. Gandhi, M.L.C.
9. Mr. Ghulam Hussain Kassim, M.L.C.
10. Mr. D. A. Vichare, M.L.C.
11. The Director of Public Instruction (*ex-officio*).

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The Director of Public Instruction to act as Secretary of the Committee.

The terms of reference were as follows:—

(1) To consider and report on the desirability and practicability of introducing free and compulsory education in Municipal and rural areas of the Presidency (including Sind, but excluding Bombay City).

(2) To suggest new sources of taxation to meet the cost of such a measure.

(3) To make detailed proposals for any legislative and administrative measures necessary for the purpose, including the machinery required to carry out any such measures.

(4) To submit a definite programme showing the various steps which should be successively taken so that a complete system of free and compulsory education may be introduced within a definite period.

(5) To consider and report on any other matters germane to this question.

Mr. P. J. Mead, C.S.I., C.I.E., I.C.S., took Mr. Pratt's place on the Committee on the latter's transfer to Ahmedabad and Mr. Cowasji Jehangir (Jr.) ceased to be a member on his appointment to act as a Member of the Bombay Executive Council.

Mr. M. Hesketh, I E.S, was appointed Secretary of the Committee in place of the Director of Public Instruction from 14th November, 1921.

2. Preliminary Work.

The Committee met four times in July, August and September, 1921, and a list of questions was drawn up which was distributed widely, while all those

interested in compulsory education to whom copies of the questions had not been sent were invited by advertisements in 13 newspapers to give evidence. A copy of the list of questions is appended to this chapter.

A good deal of statistical information was also prepared.

381 replies in all were received to the list of questions of which 100 were in the vernacular and the remainder in English.

The areas from which replies were received were as follows :—

Central Division	...	154
Konkan (Thana, Ratnagiri and Kolaba)	...	29
Northern Division	...	51
Karnatak (including Kanara)	...	76
Sind	...	44
Bombay City	...	17
Native States	...	10
		381

Of those sending replies 59 were officers of the Educational Department and 33 were primary teachers, 52 were officers of other Departments, and the remaining 237 were non-officials.

A Sub-Committee went through the written evidence and selected witnesses to be invited to give oral evidence.

In selecting these witnesses every effort was made to obtain representatives of as many classes and communities and areas as possible.

A list of those who gave oral evidence is printed in Appendix A.

3. Oral Evidence.

The Committee met to take oral evidence as follows :—

Bombay, 23rd to 25th November, 1921.
Ahmedabad, 8th to 10th December, 1921.
Karachi, 13th to 16th December, 1921.
Belgaum, 5th to 7th January, 1922.
Poona, 16th to 21st January, 1922.

The Committee sat for 5 or 6 hours each day.

The following table shows the number of witnesses invited to give oral evidence and the number who actually appeared before the Committee at each place. In addition a number of cultivators and other members of the less advanced classes gave oral evidence :—

Place.	No. of witnesses invited to give evidence.	No. of witnesses who gave oral evidence.	No. of cultivators, &c., who gave evidence.	Total number of witnesses examined.
Bombay ...	34	8	...	8
Ahmedabad ...	21	14	8	22
Karachi ...	29	16	1	17
Belgaum ...	25	21	3	24
Poona ...	45	31	6	37
Total ...	154	90	18	108

4. Evidence from Cultivators and Backward Communities.

In addition to taking evidence from a number of representatives of the backward communities, a series of three questions was sent to all Collectors, with a request that selected members of these communities should be asked to give their answers orally to the questions before two persons, one official and one non-official.

The following are the three questions :—

(1) Are you in favour of the introduction of a system of compulsory primary education, *i.e.*, will you send your children, girls as well as boys, between the ages of 6 and 11, to a school if there is one in your village or within a mile or two of your village?

(2) Do you think that the people of the class to which you belong would support a compulsory system of primary education, and send their children to school if there were one near?

(3) If a compulsory system of primary education is introduced, do you understand that if any child absents himself from school without reason his parent or guardian will be liable to be fined? And do you accept this system and do you think that the people of your class will approve of it?

A large number of replies have been received, which are summarised in Appendix B.

5. Preparation of the Report.

The Committee met in Bombay on 15th, 16th, 17th and 18th February, 1922, to consider the recommendations to be made in the Report.

The whole ground was covered and the opinions of the Committee on the various questions under consideration were embodied in a series of resolutions.

A draft Report was prepared by the Secretary, which was discussed by the Committee at a meeting held in Bombay on 14th March.

A second draft Report embodying the changes suggested at this meeting was circulated to the Committee, and this draft was afterwards modified in the light of suggestions and criticisms received from the members.

6. Cost of the Committee.

The total cost of the Committee was as follows:—

	Rs.
Establishment	... 13,152
Travelling allowances of Committee	... 10,143
Travelling allowances of witnesses	... 996
Reporting and printing	... 2,199
Other expenditure	... 1,625
	28,115

The estimated cost was Rs. 40,003.

The actual cost to Government was very much less than Rs. 28,115, as the whole of the pay of the establishment has been debited to the Committee. The net cost of the establishment was about Rs. 3,000, made up of the salaries of substitutes on the lowest grades of pay and acting allowances.

LIST OF QUESTIONS CIRCULATED BY THE COMMITTEE.

1. Will you state your profession and what opportunities you have had of forming an opinion on the question of the introduction of Compulsory Education.

2. Is your knowledge of the question general, or do you possess special knowledge with reference to any particular district, taluka, or town in this Presidency, or with reference to any particular community or interests?

3. Are you in favour of the introduction of universal compulsory education throughout the Presidency of Bombay? If so, should it be applicable to girls as well as boys?

4. Should it be introduced simultaneously in all localities, or gradually by stages, and, if the latter, by what stages?

5. Do you anticipate that the introduction of compulsory education would meet with opposition from any sections of the public, and, if so, from what sections, and for what reasons?

6. How far is the present system of primary education an effective means of dealing with illiteracy?

7. Should compulsory education necessarily be free for all?

8. Should books, slates, and other necessary materials be supplied free? If so, should they be supplied free to all pupils, or subject to what conditions?

9. Would you favour a system whereby schools were held (for the Infants and Standards I–III) in shifts of three hours net) each, the children being free to attend either at the morning or the afternoon session?

10. Are you of opinion that any changes are required in the present Primary Curriculum up to and including Standard IV, and, if so, what changes would you recommend?

11. Are you of opinion that any change is required in the present system whereby District Local Board Primary Schools are managed and inspected by the Educational Department, and, if so, what changes would you recommend? What in your opinion, should be the duties of the proposed new Panchayats, and of the Taluka and District Local Boards in respect of primary education?

12. In the event of Government withdrawing from the management of District Local Board schools, by what agency should, in your opinion, the management be conducted?

13. What arrangements should be made to secure an adequate supply of certified teachers competent to give instruction up to Standard IV? To what extent is the employment of trained teachers necessary?

14. Do you consider that the present scale of pay of Primary School teachers is adequate? If not, what minima and maxima would you suggest?

15. Are you of opinion that the pay of Primary School teachers should be entirely according to a fixed scale, or should it depend, at least partially, on results?

16. What arrangements should be made under compulsory education to aid schools under private management?

17. What should be the minimum number of children of school-going age in a particular area to justify the introduction of compulsory eudcation in that area?

18. Should any special arrangements be made for opening schools in sparsely populated areas?

19. Are you in favour of children of the depressed classes being admitted to ordinary schools?

20. Have you any suggestions to offer as to the character of the buildings required for schools in (*a*) rural, (*b*) urban areas? How would you propose to provide the additional accommodation that would be immediately required for the increased numbers that would attend school as the result of the introduction of compulsory education?

21. Having regard to the fact that part of the expenditure on primary education is met from the Local Fund Cess, do you think that the cess should be increased to meet the needs of compulsory education in rural areas, and, if so, to what extent?

22. Over and above the local cess, what taxation would you impose on other sources of income for the purpose of compulsory education, and on what sliding scale?

23. Should Government contribute a fixed proportion of the total expenditure on compulsory education and, if so, what proportion?

24. To meet the needs in Municipal areas what special method of taxation would you suggest?

CHAPTER II.

SURVEY OF THE PRESENT STATE OF PRIMARY EDUCATION.

1. Area and Population of the Presidency.

The area of the British Districts of the Bombay Presidency is 123,517 square miles or more than twice that of England and Wales. The population according to the Census of 1921 is 19,291,719 of whom 10,138,575 are men and 9,153,144 are women, or little more than half the population of England and Wales: There are 202 'towns' with over 5,000 inhabitants, and 26,528 villages. About 20 per cent. of the people live in towns, and the remaining 80 per cent. in villages of less than 5,000 inhabitants. The revenue village, which is adopted as the Census unit, often consists of a number of hamlets, especially in the wilder regions, and in many cases the area comprised by the 'village' is very large. On an average there are 125 occupied houses in each village, and between 600 and 700 persons.

The conditions vary a good deal. In Sind, the average area of a village is 9 square miles, as compared with a little over 3½ square miles in the Presidency proper. The density of the population in Sind is only 70 to the square mile, and it falls much lower in Kohistan and the desert and in the delta of the Indus. In the Presidency proper the average density of the population is 193 to the square mile, and in some parts of Gujarat it reaches 600 or 700.

The diversities of climate and of physical features to be found in the Bombay Presidency are well known and need not be enumerated here. The lack of homogeneity among the people is evident from the fact that four vernaculars are spoken, in addition to Urdu, corresponding to the main natural divisions of the Presidency, the Deccan and Konkan, Gujarat, the Karnatak, and Sind.

2. Attendance at Primary Schools.

On 31st March 1921, there were close on 600,000 boys and 157,000 girls attending primary schools in the Bombay Presidency, excluding Bombay City. There are in all about 12,500 schools. In addition about 45,000 childern are said to attend private schools, *i.e.*, those not recognised by Government. These have been omitted however, in the statistics given in this Report.

The period of compulsion was fixed by the Patel Act, [Bombay Primary Education (District Municipalities) Act, 1918], at 5 years, *i.e.*, from the age of 6 to the age of 11. From the Census of 1921, it is found that 14·8 per cent. of the population are between the ages of 5 and 10, the figures for the ages 6 to 11 being slightly lower. The percentage appears to be a good deal less in large towns, *e.g.*, a Census taken in Karachi showed only 6 per cent. of the population as of school-going age, while one at Surat showed 10 per cent., but such variations cannot be taken into account in dealing with the Presidency as a whole.

A number of children will have to be exempted on account of physical infirmities, lack of a school within a reasonable distance or similar causes, and it has therefore been assumed that 12½ per cent. of the population are of school-going age, *i.e.*, within the limits of age fixed for compulsion. In Sind owing to the scattered nature of the villages more children will have to be exempted because they live too far from the village school, and in that Province it would probably be safer to take a lower percentage than 12½ as of school-going age.

Of the children now attending primary schools, it appears from a table of ages that about 60 per cent. only are of school-going age, the remainder being below or above the limits. On the other hand a few children of school-going age are attending secondary schools, and it has therefore been assumed that two-thirds or 67 per cent. of the children in primary schools are of school-going age.

The calculations which follow are based on these two assumptions.

There are in all 26,730 towns and villages in the Presidency, including Sind, of which 10,167 are returned as having one or more schools, leaving 16,563 without schools. Of these 'school-less' villages, 248 have a population over 1,000 and 2,521 a population between 500 and 1,000.

As pointed out previously a village may consist of several scattered hamlets and this accounts for there being as many as 248 villages of over 1,000 inhabitants without schools.

There are 16,788 villages in all with a population below 500, and of these about 3,000 have schools. It is extremely improbable that all the smaller villages will be able to produce sufficient children to justify a school, and for this reason it has been assumed that half of the total population of such villages cannot be provided with schools at present.

The following table shows the total number of children of school-going age, the number of such children already at school, and the number to be provided for in City Municipalities, Town Municipalities and rural areas:—

[All figures are in thousands.]

BOMBAY PRESIDENCY, EXCLUDING BOMBAY CITY AND SIND.

	Total No. of children of school-going age.		No. of children of school-going age at school.		No of children of school-going age *not* at school.	
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
City Municipalities ...	89	78	46	19	43	59
Town Municipalities ...	61	57	36	10	25	47
Villages with schools ...	5,07	4,94	2,59	57	2,48	4,37
	6,57	6,29	3,41	86	3,16	5,43
Villages without schools in which schools can be started.	1,85	1,85	...	...	1,85	1,85
	8,42	8,14	3,41	86	5,01	7,28
Villages in which schools are not likely to flourish.	1,00	1,00	...	...	1,00	1,00
Total for Presidency ...	9,42	9,14	3,41	86	6,01	8,28
SIND.						
City Municipalities ...	29	20	13	6	16	14
Town Municipalities ...	9	7	3	1	6	6
Villages with schools ...	1,56	1,16	46	9	1,10	1,07
	1,94	1,43	62	16	1,32	1,27
Villages without schools in which schools can be started.	14	14	...	...	14	14
	2,08	1,57	62	16	1,46	1,41
Villages in which schools are not likely to flourish.	23	23	...	...	23	23
Total for Sind ...	2,31	1,80	62	16	1,69	1,64
Grand Total for Presidency and Sind.	11,73	10,94	4,03	1,02	7,70	9,92

It will be seen that out of 942,000 boys of school-going age in the Presidency 341,000 or 36 per cent. attend school. For girls the percentage is a little over 9. In Sind only 27 per cent. of boys and 9 per cent. of girls are at present at school.

It may also be pointed out that in the Presidency over two-thirds of the population live in towns and villages in which there is a school, and over 50 per cent. of the boys of school-going age living in these towns and villages do attend school. The percentage is about the same for rural areas and City Municipalities and rather larger for Town Municipalities. In Sind the distribution of schools is even more widespread, and over 80 per cent. of the people have a school in their town or village. Many of these schools, however, are Mulla schools. About 30 per cent. of the boys in these villages attend school. It must also be remembered that in Sind where the average area of a village is 9 square miles a considerable proportion of the villagers do not live near enough to the school for their children to attend it. A bigger allowance ought to be made for exemptions if compulsion is introduced.

If compulsory primary education is to be universal, 7·7 lakhs of boys and 9·9 lakhs of girls will have to be provided for.

Of these 4·5 lakhs of boys and 4·3 lakhs of girls live in towns and villages already provided with a school, and 1·2 lakhs of boys and about the same number of girls belong to very small villages, in which there are not likely to be sufficient children to justify a school being opened, at any rate until the bigger villages have been provided for.

3. Education among Different Classes.

The population of the Presidency, excluding Sind, is about 160 lakhs which is made up as follows:—

	Per cent.
Brahmans ...	4
Non-Brahman Hindus ...	84
Musalmans ...	8
Others ...	4
	100

Among the non-Brahman Hindus, who form so large a proportion of the population, 30 per cent. or close on 40 lakhs belong to the depressed classes and jungle and criminal tribes, who have made little or no progress in education. The following table shows the percentage of the children of school-going age, *i.e.*, within the 'compulsory' limits, of each class, who are actually attending school:—

	Per cent.	
	Boys.	Girls.
Brahmans ...	78	48
Non-Brahman Hindus ...	31	6
Musalmans ...	55	20

The figures for non-Brahman Hindus are increased by the inclusion of a number of advanced communities, *e.g.*, Prabhus and Vanis. The backwardness of the non-Brahmans is borne out by the Census tables of literacy, which show very low figures for this class. At the 1911 Census, 635 male Konkanasth Brahmans per mille were shown as literate as against 46 Marathas, 10 Mahars and 2 Bhils. The disparity between the Brahmans and other castes is accentuated if children attending secondary schools are also taken into account, but this is outside the scope of the present enquiry.

Sind is essentially a Musalman province, its population of 33 lakhs being made up of 75 per cent. of Musalmans (a figure which reaches 80 per cent. in rural areas), 24 per cent. of Hindus and 1 per cent. of 'others'.

The percentage of children of school-going age who are actually attending school is as follows:—

	Per cent.	
	Boys.	Girls.
Musalmans ...	18	6
Hindus ...	48	15

While the literacy of male Mussalmans is only 29 per mille, that of Hindus is 227 or 8 times as great.

These figures demonstrate clearly that the main problem is to develop primary education among the non-Brahman Hindus in the Presidency proper and among the Musalmans in Sind.

4. Progress of Primary Education.

During the last 10 years there has been a definite increase in the number of boys and of girls attending primary schools. The former has increased by 38 per cent. and the latter by 90 per cent. There is little doubt that the progress would have been much more rapid had it not been for the influence of the war and the need for economy.

That there is a growing demand for primary education is shown by the fact that whereas the number of schools increased by less than 3 per cent. during 1920-21, the pupils showed an increase of over 6 per cent.

The growth of literacy is also an index of the rapidity with which education is spreading. The following table is taken from the Census returns of 1911 and 1921, comparison with earlier years not being possible owing to a change in the definition of literacy in 1911. The present definition of "literacy" is ability to read and write a letter :—

[All figures are per mille.]

		1911.	1921.	Increase.
Literate. All ages	Males ...	121	140	16 per cent.
	Females ...	14·5	25	70 per cent.
Between ages 0-10	Males ...	13·5	21·8	61 per cent.
	Females ...	4·3	8·3	94 per cent.
Between ages 10-15	Males ...	117	139	19 per cent.
	Females ...	24	41	72 per cent.

These figures show that considerable progress has been made.

There has also been a remarkable increase in the number of vernacular books published in the Presidency during the last decade in comparison with the previous decade, amounting in the case of some vernaculars to over 150 per cent.

It is necessary to point out, however, that if compulsory education is to be universal within 10 years, it will be necessary to increase the present rate of progress at least five times for boys and thirteen times for girls.

The increase in expenditure has been very rapid in the decade, especially during the last two or three years. In 1910-11, the direct expenditure on primary education was Rs. 45,22,957 towards which Government contributed Rs. 20,17,180 or 44 per cent. By 1920-21, the total expenditure had risen to Rs. 1,27,91,451, the Government share being Rs. 77,78,913 or 61 per cent.

Although very few Municipalities have taken advantage of the Patel Act, enabling them to introduce compulsory education, which was passed in 1918, it is hardly fair to use this as an argument against compulsion.

The various increases of pay awarded to primary teachers have practically doubled the expenditure of the Municipalities on primary education, without any corresponding increase in the number of schools and pupils, and a number of schemes which had been prepared have had to be abandoned or postponed on this account. Moreover, political agitation has done much to defeat the success of the experiment in several towns where compulsion has been attempted.

5. Present Expenditure on Primary Education.

The provision of the necessary funds is perhaps the most difficult problem in connection with compulsory education.

An estimate of the amount of money which will be required has been worked out in Chapter V.

The following table shows the expenditure from different sources on all kinds of primary schools in the Bombay Presidency, excluding Bombay City, in 1920-21.

The averages are obtained by dividing the total expenditure by the number of pupils on 31st March, 1921, and are thus slightly lower than if the average number on the rolls during the year were used as a divisor.

Class of School.	No. of Schools.	No. of pupils.	Provl. revenues.	Local Funds.	Municipal grants.	Fee receipts.	Other sources.	Total.	Total cost per pupil.	Cost to Government per pupil.
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Boys' Schools—										
Government ...	33	4,242	60,623	600	...	2,474	...	63,697	15·0	14·1
Local Board ...	8,034	4,53,052	55,55,546	6,20,231	...	1,66,788	59,571	64,02,136	14·1	12·2
Municipal ...	695	1,06,569	9,11,691	50,191	7,90,385	79,998	17,558	18,49,823	17·4	8·6
Aided ...	2,323	93,301	2,97,407	1,195	28,259	78,474	5,53,072	9,58,407	10·3	3·2
Unaided ...	105	4,290	...	...	...	2,996	45,350	48,346	11·3	...
Total ...	11,190	6,61,454	68,25,267	6,72,217	8,18,644	3,30,730	6,75,551	98,22,409	14·1	10·3
Girls' Schools—										
Government ...	11	1,311	41,385	...	...	...	...	41,385	31·6	31·6
Local Board ...	597	33,663	3,16,714	1,77,927	...	...	1,224	4,95,865	14·7	9·4
Municipal ...	308	34,982	2,23,909	4,693	2,66,668	385	7,531	5,03,192	16·5	8·4
Aided ...	453	23,801	1,18,249	150	16,415	6,366	2,10,666	3,51,846	14·8	5·0
Unaided ...	13	1,354	...	...	...	38	15,932	15,970	11·8	...
Total ...	1,382	95,116	7,00,257	1,82,776	2,83,083	6,789	2,35,353	14,08,258	14·8	7·5
Grand Total ...	12,572	7,56,570	75,25,524	8,54,993	11,01,727	3,37,519	9,10,904	1,07,30,667	14·2	10·0

It will be seen that nearly 80 per cent. of the pupils attend schools maintained by Government, District Local Boards and Municipalities, and that 70 per cent. of the expenditure is met from Provincial revenues, 8 per cent. being found by District Local Boards, and 10 per cent. by Municipalities. The amount realised from subscriptions, endowments and other sources is 9 lakhs, but a good deal of this is nominal, and part of it is provided for schools in which

there is compulsory religious instruction. It is not likely that there will be any increase under this head, while fees will presumably be abolished. Consequently practically all additional expenditure on primary education will have to be met from the resources of Government and of the District Local Boards, and Municipalities.

6. Grants-in-aid to Local Bodies.

(*a*) District Local Boards.

The system by which local bodies and school managers are aided may be briefly explained.

The District Local Boards have no financial resources of their own for education except a one-third share of the local fund cess, which gives them about 10 lakhs annually, and fee receipts amounting to 1⅔ lakhs. All expenditure over and above this sum of 11 or 12 lakhs has to be met from Government grants. Formerly District Local Boards received a grant equal to one-third of their expenditure on primary education, but the grants were fixed for a term of years and had not been reassessed for some time, when in 1903 Government decided to raise the amount of grant from one-third to one-half of the expenditure. Since that time, it has been the practice to award additional grants to meet all new expenditure. For instance, Government decide that a certain number of new Local Board Schools should be opened, or that the salaries of a certain class of teachers should be raised, and pay to the District Local Board a grant equal to the estimated cost. Consequently District Local Boards have been receiving a dozen or more special grants, each earmarked for a special purpose. The total grant now amounts to the expenditure minus local fund cess and fee receipts.

(*b*) Municipalities.

Grants to Municipalities are awarded on a different system. They now receive a grant equal to one-half of the expenditure on primary education in the previous year. This has operated somewhat harshly of recent years. Owing to the increases which have been sanctioned in the pay and allowances of teachers the expenditure of the Municipalities on primary education has been nearly doubled. With expenditure steadily increasing, it follows that the grant in a particular year is considerably less than half the expenditure in that year, being based on the expenditure in the previous year. This disability has, however, been to some extent mitigated, and in the case of the recent increases in the minimum pay of teachers, grants have been given on the additional expenditure during the first year in that year.

(*c*) Aided Schools.

Registered primary schools are aided according to the ordinary rules of the Grant-in-Aid Code, and receive a grant equal to one-third of the expenditure of the previous year, except girls' schools in Sind, which receive a grant equal to half the expenditure. There are also indigenous schools, teaching less advanced courses, which receive a grant based on attendance and examination results. To this class belong the Mulla schools in Sind, which are aided very liberally.

It is generally felt that the grants to aided primary schools should be raised to at least one-half of the expenditure, on account of the low fee-receipts and the increased pay of primary teachers, and this enhancement will become more urgent if fees are abolished in publicly managed schools.

An alternative is to assess the grants on a capitation basis.

7. Comparison with Other Provinces.

In 1919-20, the percentage of pupils in primary schools to the population in Bombay Presidency was 5·9 for boys and 1·7 for girls, while for the whole of British India the corresponding figures were 3·9 and 1·0. In other words

Bombay is about 50 per cent. in advance of India as a whole, but appears to be on much the same level as Bengal and Madras, as regards numbers.

It is interesting to note, however, that whereas over 80 per cent. of the primary schools in Bombay Presidency are managed by Government, District Local Boards, and Municipalities, less than 7 per cent. of the schools in Bengal are under similar management, and only 27 per cent. in Madras. While Bombay depends to a comparatively small extent on private enterprise, Bengal relies on it almost entirely. It is presumably for this reason that a pupil in a Bengal primary school cost less than Rs. 3-8-0 in 1918-1919. The corresponding figure for Bombay was Rs. 13, which has since increased to over Rs. 16 (if Bombay City is included).

The distribution of the cost of educating each pupil in a primary school (including aided and unaided schools, and schools in Bombay City) in Bombay in 1920-1921 is compared with the cost in Bengal in 1918-1919 in the following table :—

	Bombay. 1920-21 Rs. a. p.	Bengal. 1918-19. Rs. a. p.
Provincial Revenues ...	10 1 8	1 3 2
District Local Boards ...	1 1 9	0 8 8
Municipalities ...	3 2 2	0 1 2
Fees ...	0 10 6	1 4 10
Other sources ...	1 8 3	0 5 8
Total ...	16 8 4	3 7 6

In Bengal each pupil paid 38 per cent. of the cost of his education in the shape of fees, while in Bombay the fees amounted to less than 4 per cent.

The total cost of about 8 lakhs of pupils in primary schools in Bombay in 1920-1921 was over 1¼ crores of rupees. In 1919-1920, the Bombay Government contributed 67 lakhs towards primary education, while the other provincial Governments together contributed 114 lakhs only, although their combined population is more than 11 times that of Bombay.

This is the price which the Presidency pays for a well-organised, widely distributed and comparatively efficient system of primary education. To what extent economies can be introduced and private enterprise encouraged in Bombay will be considered later.

CHAPTER III.

PRACTICABILITY OF COMPULSORY PRIMARY EDUCATION.

[N.B.—The Specific Recommendations of the Committee are printed in Italics.]

The first of the terms of reference to be considered is the desirability and practicability of introducing free and compulsory education in the Municipal and rural areas of the Presidency (including Sind, but excluding Bombay City).

(1) Desirability of Compulsory Education.

On the question of desirability there is no difference of opinion.

We recommend that universal compulsory education for both boys and girls should be the goal to be aimed at.

2. Practicability of introducing Compulsory Education.

The question of practicability resolves itself into two parts. The first point to be considered is whether the people are ready for such a measure or whether compulsion may not be met with opposition sufficiently strong to make its introduction inexpedient at present.

The second point is how far the resources of the Presidency in money, teachers, and buildings will suffice to enable the introduction of compulsory education to be effective. This question will be considered later. For the present we shall discuss only the expedience of introducing compulsory primary education.

3. Attitude of the People regarding Compulsory Education.

With some exceptions the educated witnesses who gave written or oral evidence favoured the introduction of compulsory education, and stated that the opposition which might be met with need not be considered too seriously, as it would rapidly die away. The people themselves are said to realise the need for education, but feel that sufficient progress cannot be made on a voluntary basis. One or two witnesses very definitely opposed compulsion and put forward the view that education is not necessary except for the higher castes. There were, however, a certain number of witnesses, whose knowledge and experience lead us to attach great importance to their evidence, who strongly advocated a cautious policy, on the grounds that the people are not yet ready for such an advanced measure as compulsory education, and that its introduction would be bitterly resented and in the present political conditions might lead to serious trouble.

We attach considerable importance to the evidence of the large number of cultivators, artisans, and members of backward communities, who either appeared before the Committee or gave oral replies to our three questions, which were recorded before two persons, one official and one non-official. Among these witnesses from the Deccan, Konkan and Karnatak, a large majority favoured the introduction of compulsion and said that they and their friends were prepared for the infliction of penalties if they did not send their children to school. A number, however, suggested that girls should be exempted. On the other hand, a few cultivators from these areas who appeared before us vehemently protested against any measure of compulsory education, giving as a reason their poverty and the need of their children's earnings. Their difficulties can, to some extent, be met by fixing the school hours and vacations to suit the needs of agriculture. On the whole it appears that there is a genuine desire for education among the masses themselves in the Deccan, Konkan and Karnatak and that the movement in favour of compulsion is not confined to the leaders of the communities. We might go even further and say that among the Marathas and some other classes there seems to be a real demand for compulsory education, which they look upon as essential to their social and political progress.

In Gujarat and Sind, however, a very large majority of the cultivating and backward classes who were consulted opposed compulsion in no uncertain manner for boys as well as girls. From these two divisions also appeared most of the educated witnesses who advocated caution. Gujarat is educationally the most advanced area in the Presidency, and judging from the statistics of literacy at the 1921 census is very little behind Baroda, in which compulsory education was introduced over 15 years ago. We consider, however, that the conditions in Gujarat are far less favourable for the introduction of compulsion than in the Deccan. The population is far less homogeneous, and the wealth of Gujarat has produced a far larger proportion of dependants on well-to-do cultivators than is to be found in any Deccan village. Disturbed political conditions may have also temporarily affected the attitude of the people, but the root cause is undoubtedly ethnological and economic.

Sind differs greatly from the rest of the Presidency and will be considered separately.

It is evident that in parts of the Presidency a good deal of propaganda work has been done by social and political leaders to pave the way for the introduction of compulsory education, but much remains to be done to ensure the willing co-operation of the people generally.

We would urge the need of steps being taken throughout the Presidency to initiate or continue the work of educating public opinion and of bringing the masses to realise the value of education.

4. Introduction of Compulsion for Boys in the Presidency proper.

In the previous paragraph we have discussed the evidence received from all classes of people as to the attitude of the masses towards compulsory education, and we may now summarise our conclusions regarding the expedience of introducing compulsion in the various areas of the Presidency.

We are of opinion that in the Marathi and Kanarese speaking districts the introduction of compulsory education for boys will not meet with serious opposition, and that the people generally are ready for such a measure.

In view of the evidence of many witnesses and of the general conditions we consider that in Gujarat it will be necessary to proceed with caution.

We suggest that provision should be made for exempting particular communities or areas in special cases, such exemptions being sanctioned by Government on the recommendation of the local education authority (to be defined later).

5. Introduction of Compulsion for Girls in the Presidency proper.

It is necessary to give separate consideration to the question of introducing compulsory education for girls. The statistics in Chapter II show that the girls are educationally far behind the boys, especially in rural areas. The problem of finding suitable women teachers has not yet been solved, and 38 per cent. of girls now at school are studying in boys' schools. There is said to be little objection to this, however, up to the age of 10 or 11, except perhaps in the case of Mahomedans. The majority of the witnesses favoured the inclusion of girls as well as boys in any measure of compulsory education, but agreed that if provision cannot be made at once for both, boys should be given the preference. A few witnesses, however, admitted that in some areas the prejudice against the education of girls still lingers—it is said to make them less capable housewives. There are also special difficulties in connection with Mahomedan girls. To meet these difficulties it has been suggested that *Mohalla* schools should be provided, *i.e.*, schools situated in the centre of the Mahomedan quarter of a town or village.

It may be noted that several witnesses argued that compulsion should be introduced for girls first on the ground that they are much more backward, a view with which we cannot agree.

We recommend that compulsion should ultimately be applied to both boys and girls, but as the demand for compulsory education for girls is less keen and there are many practical difficulties in the way of introducing compulsion for both boys and girls simultaneously, we consider that generally compulsion should be applied to boys first, the education of girls being developed on a voluntary basis. We are of opinion, however, that it is practicable to apply compulsion to girls in city municipalities. We also recommend that compulsion should be applied in other areas in which a majority of the people are in favour of it.

In view of the comparatively slow progress which has been made in the education of girls, especially in rural areas, we would strongly emphasise the need of vigorous propaganda work in the villages to induce parents to send their daughters to school.

6. Compulsory Education in Sind.

As pointed out above, a very large majority of the witnesses of the cultivating and backward classes in Sind, whose evidence is before us, are opposed to compulsion.

Sind is educationally much behind the rest of the Presidency, except in the large towns and in a few rural areas. It is sparsely populated and many of the villages are made up of widely scattered houses, and a very large number of small schools would be necessary to provide for the whole population. Unfortunately we received very little evidence from the Zamindars and other non-official Mahomedans, but it would appear that the Mahomedans, who form nearly 80 per cent. of the rural population, are indifferent to secular education for boys and hostile to education for girls. They attach great importance, however, to their children learning to read the Koran, and for this reason a good deal of encouragement has been given to Mullas who are willing to give secular instruction in addition to teaching the Koran. Special inspecting officers have been appointed to supervise the Mulla schools, and during the last 5 years the number of schools in which secular instruction is given has increased rapidly. There are now over 1,300 such schools in rural areas, attended by 23,000 boys and 10,000 girls, as compared with less than 1,000 Local Board schools attended by 45,000 boys of whom about half are Mahomedans, and 2,400 girls. The efficiency of these schools is on the average below that of the Local Board schools, but they are said to be improving, and if the unsatisfactory ones are weeded out, the others might be recognised for the purposes of a Compulsory Education Act. The plan of providing qualified assistant masters paid by Government in Mulla schools appears to be meeting with success, and to be worth developing, provided it is not found to be too costly. It is by no means certain that the Mullas would be prepared to play their part in the arrangements necessary to enforce attendance. The difficulty also arises in small villages in which there is a flourishing Mulla school that the number of other children is not sufficient to justify a Local Board school, and there is no school for the Hindus to attend.

Another plan for attracting Mahomedan pupils which has met with success is the appointment of Mullas on a small salary to important Local Board schools to teach the Koran out of school hours.

It may be added that some of the few Sindhi cultivators who expressed themselves in favour of compulsion in their replies to our questions definitely made it a condition that their children should be allowed to attend Mulla schools.

As far as we can judge from the evidence before us, both Local Board and Mulla schools must play a part in the development of primary education for boys in Sind.

In the case of Mahomedan girls there are special difficulties. A considerable number attend Mulla schools with boys for a few years. They would on no account be allowed to attend a Local Board boys' school, or any school with a male teacher other than a Mulla. In Sind there are practically no women teachers outside the large towns. The Mohalla school which has been suggested for Mahomedan girls might be tried, if teachers can be found, but compulsory education for Mahomedan girls in rural areas in Sind appears to be out of the question at present.

We are of opinion that compulsory education for boys cannot be introduced in Sind within a definite period, except in Municipal areas and a few advanced talukas, where the conditions are similar to those in the Presidency proper.

Elsewhere we suggest that compulsion should be tried in selected villages or groups of villages, and that every effort should be made to induce the Zamindars and other men of influence to foster such experiments. It appears to be neccesary to recognise Mulla schools for the purposes of a Compulsory Education Act, at any rate for some time.

We do not consider that it would be wise to attempt to introduce compulsory education for girls in Sind, except perhaps in Municipal areas, but this does not preclude its introduction into any other area in which the majority of the people desire it.

7. Feasibility of Introducing Compulsory Education.

We have stated our conclusions regarding the expedience of introducing compulsory education, and the question of 'practicability' has now to be considered from the other point of view, *viz.*, how far the resources of the Presidency in money, teachers, and buildings will suffice for the carrying out of any scheme.

We are hardly in a position to give a definite answer to this question, at any rate as far as the provision of funds is concerned.

We have, however, given full consideration to it in working out a detailed programme for the introduction of compulsion, and we believe that this programme, which is described in Chapter V, is a feasible one, provided not unduly large additional funds can be provided.

CHAPTER IV.

SOME POINTS IN CONNECTION WITH FREE AND COMPULSORY PRIMARY EDUCATION.

Before proceeding to work out a detailed programme for the introduction of compulsory education, it appears to be desirable to consider several important questions in connection with compulsion.

1. Age Limit.

It is laid down in the Patel Act that primary education shall be compulsory for a child whose age is not less than six and not more than eleven years, *i.e.*, for the five years immediately succeeding the completion of his sixth year.

It is generally agreed that a shorter period than 5 years is not sufficient to ensure a child's acquiring permanent literacy, *i.e.*, the ability to read and write a letter.

If he leaves school after a shorter period of education, he is in danger of forgetting what he has learnt.

There was a difference of opinion among witnesses as to whether the initial age should be five or six, and there was a fair amount of evidence that fixing the higher limit at ten instead of eleven would be more popular with the working classes. On the whole we are disposed to favour the limits five to ten.

In England, the Education Act of 1918 lays down that a child need not begin to attend school till the term after he is five, but must remain in attendance till the end of the term in which he reaches the maximum limit (fourteen). Local education authorities are permitted to make regulations by which children will be received only at the beginning of a term. A similar procedure obtains in France.

It is obviously undesirable that children should be joining a school for the first time at all times of the year, as it is impossible for a master to teach satisfactorily a class of children all of whom are in different stages of progress. In the villages, at any rate, it will be more convenient to fix the beginning of the school year rather than the term. This will result in the compulsory limits being on the average $5\frac{1}{2}$ and $10\frac{1}{2}$ years. There is also a good deal to be said for allowing local education authorities to refuse admission to children below the compulsory age limit. They are usually not sufficiently advanced to profit by the instruction intended for older pupils, and there is no reason why schools should be used as nurseries by parents who want to be relieved of the trouble of looking after their young children during the day.

The term 'local education authority' used above is defined in Chapter VI para. 4. For the present it may be taken to mean the District Local Board or Municipality.

We recommend that attendance at a primary school should be compulsory for a child from the beginning of the school year immediately following the day on which he completes five years of age, and that he should remain at school for 5 years, i.e., *until the end of the school year during which he completes 10 years of age.*

Local authorities should be empowered to refuse admission to children below the compulsory age limit or at times other than the beginning of the school year.

2. Application of Compulsion.

It was suggested by one or two witnesses that when compulsion is introduced into an area it should be applied in the first year to children of 5 or 6 only, in the second year to those between 5 and 7 and so on. The reason given for this proposal is that it is not much use applying compulsion to a child of 8 or 9, who cannot be compelled to remain at school for more than a year or two. It would also permit of the introduction of compulsory education being spread over 4 or 5 years, which would simplify the task of the local authorities, and might also prove more acceptable to the labouring classes. It would, however, be difficult to apply compulsion to children of 7 or 8 already in school in the first year, if those outside were exempted.

Another suggestion which was made is that compulsion should be applied to the Infant class only in the first year, to this class and Standard I in the second year and so on.

We are not disposed to accept either of these proposals. It is hoped that most of the older boys to whom compulsion is applied at the beginning will voluntarily remain at school after the compulsory age limit is passed to complete their primary education.

We recommend that when compulsory education is introduced into any area, it should be made immediately applicable to all children between the compulsory limits of ages, except those belonging to classes specially exempted.

3. Definition of Primary Education.

It appears to be desirable at this stage to define the meaning of primary education for the purposes of compulsory education.

In the Rules made under the Patel Act, primary education is defined as 'education given wholly through the vernacular in any of the standards prescribed by Government for primary schools.' The primary departments of English-teaching schools and Native Christian schools in Salsette and Bassein which teach a specially approved purely 'English' primary curriculum are also recognised as primary schools.

There is a good deal of confusion in the use of the terms 'primary' and 'secondary' in India, and the former is applied generally in this Presidency to purely vernacular schools, and the latter to schools in which English is taught. Although in Bombay the course in Standards V to VII of a primary school and Standards I to III of an Anglo-Vernacular schools are practically the same except for the introduction of English, the former is classed as primary and the latter as secondary.

We consider that primary education for the purposes of a Compulsory Education Act should include instruction in the Infant class and first four Standards only, or such other classes or standards as may be substituted for the first 5 years of the primary course. Section 8 (*b*) of the Patel Act exempts a boy from further attendance at school if he has already 'completed his primary education' and we have taken this to mean that he should have completed Standard IV and not Standard VII, in spite of the definition of primary education in the Rules.

It appears to us to be somewhat illogical to speak of compulsory primary education, when compulsion is to be applied only to one stage of the primary

course. On the other hand, the use of the expression 'primary education' to connote instruction in all the standards of the primary school is so well established that it does not seem to be feasible to limit its meaning now.

The Infant Class and first four Standards are sometimes described as the lower primary stage, Standards V to VII comprising the upper primary stage. Unfortunately the expression 'compulsory lower primary education' is not one which can be recommended.

We suggest that the question of adopting the English expression 'Elementary Education' be considered. We shall, however, in this Report continue to use the expression 'Primary Education', which we define as education through the vernacular in the Infant Class and first four Standards of primary schools.

In the case of children attending European or English-teaching schools or Native Christian schools in Salsette or Bassein, the first five Standards of these schools may be recognised as primary Standards.

4. Recognition of Schools.

In the Patel Act, a recognised primary school is defined as one in which instruction in primary education is given and which is for the time being recognised by the prescribed educational authority, *i.e.*, by the Director of Public Instruction and Educational Inspector. By the rules made under the Act, this definition is extended to include indigenous and other schools registered or recognised by the Educational Department.

There is some confusion about the use of the word 'recognised.' The Educational Department *recognises* schools, provided they submit to inspection and agree to supply such information and statistics as the Department requires. This gives them the privilege of sending up candidates for public examinations, &c., but recognition of schools for the purpose of a Compulsory Education Act is an entirely different matter.

Further a school may be recognised as one to which parents *must* send their children under a Compulsory Education Act, if there is no other school in the locality, and it may also be recognised as one to which parents *may* send their children, if there is more than one school in the locality. For example, if the only school in a village is a Local Board school, parents would naturally be compelled to send their children to it, but if there is no Local Board school, but only an aided or indigenous school it is doubtful whether ordinarily it is justifiable to compel children to attend it. An exception might perhaps be made in the case of well-conducted non-sectarian aided schools generally, and of Mulla schools for Mahomedans in Sind.

On the other hand, if there is a Local Board school and also an aided school, or indigenous school recognised by the Educational Department, attendance at the latter should be accepted.

We suggest that a school to which a parent is compelled to send his children, there being no other school in the locality, should be called a registered *school. Generally registered schools would be under public management,* i.e., *schools, maintained by Government, a District Local Board or a Municipality, but in special cases other schools might be registered by the local educational authority, provided that no school should be so registered in which attendance at religious instruction is compulsory, and that if a Mulla school in Sind is registered, the Hindus in the locality should be exempted from attendance.*

It follows that compulsion cannot be introduced into any area in which there is no registered school.

The term approved *may be applied to schools, attendance at which is recognised by the local authority for the purposes of a Compulsory Education Act.*

It will be seen that the term 'approved' will include all registered schools, and that 'registered' will include all schools under public management.

The use of the expression 'recognised school' has been avoided, as it is already applied to schools recognised by the Educational Department in accordance with the rules of the Grant-in-Aid Code.

It will be noted that we have delegated the power of registering and approving schools to the local education authority.

In section 8 (*b*) of the Patel Act, exemption is allowed in the case of children "receiving, otherwise than in a recognised primary school, instruction which in the opinion of the School Committee is efficient."

Apparently this gives the power to the School Committee to 'approve' of unrecognised schools, as well as of private instruction.

We consider that the local education authority should be the body empowered to register and approve schools for the purposes of a Compulsory Education Act, but we suggest that all schools recognised by Government in accordance with the Grant-in-Aid Code should be included in the list of approved schools.

The corresponding section of the English Act accepts schools open to inspection either by the local education authority or by the Board of Education provided that satisfactory registers of attendance are kept.

This proposal will meet the difficulty which is likely to arise in Sind, where it does not at present seem to be desirable to place the Mulla schools in any way under the control of the local authorities.

5. Attendance.

We accept the definition of attendance given in section 2 of the Patel Act with a few modifications—

To attend an approved primary school means to be present for instruction at such school on such days and at such time or times on each day as may be required by the local educational authority in accordance with the rules framed by Government.

It will be necessary for Government to lay down certain limits as regards school hours and vacations. The local authority will then be allowed a comparatively free hand within these limits.

It is perhaps necessary to add a clause dealing with temporary absence from school, as distinct from general exemption from attending school.

We suggest the following:—

Leave of absence from school for short periods may be given by the Head Master in cases of sickness or for other good cause.

6. General Exemptions.

We recommend that a parent may be deemed to have reasonable excuse for failure to cause a child to attend a recognised primary school in any of the following cases:—

(a) *When the child is disqualified for attendance at school by reason of physical infirmity or mental incapacity or on account of famine or epidemic or other unavoidable cause.*

(b) *When the child is receiving otherwise than in an approved primary school instruction which in the opinion of the local education authority is efficient, or has received a certificate from the local education authority of having completed his primary education.*

(c) *When there is no recognised primary school within a distance, to be fixed by Government in consultation with the local education authority, from the residence of the child, measured according to the nearest road.*

(d) *When after due application, entrance to a registered school has been refused to the child by reason of lack of accommodation, or for other*

sufficient cause, until such time as the parent is notified that the child can be admitted.

(e) *When there is no registered school in the locality in which instruction is given in the child's vernacular.*

These conditions follow generally those laid down in section 8 of the Patel Act.

In (*a*) famines and epidemics have been included as reasonable causes of non-attendance.

In (*b*) the completion of a child's primary education has been defined more clearly.

No distance has been stated in (*c*). The Patel Act gives one mile, but as conditions vary a good deal, it has been deemed advisable to allow some latitude.

(*d*) is a new provision which appears to be necessary.

(*e*) has been inserted to meet the case of parents of children temporarily residing in an area in which their vernacular is not spoken. It may be necessary to limit the application of the clause to children whose parents have resided in a foreign area for less than a certain period. The clause is not intended to apply to those Mahomedans who claim that Urdu is their vernacular. Their case will be considered separately.

7. Mahomedans.

The question of compulsory education for Mahomedans in the Presidency, although not in Sind, is complicated by the fact that many desire that their children should be educated through the medium of Urdu rather than the local vernacular. At present there are two sets of Standards, one in which Urdu is the main language, and the vernacular a second one, and the other in which the vernacular is the principal language.

As long as there are sufficient Mahomedans in a locality to justify a separate school or class, there is no reason why they should not have one, but if there are a few children only we consider that they should be compelled to attend the ordinary school, and the majority of the Mahomedan witnesses who appeared before us accepted this view.

We recommend that in determining whether the Mahomedan children in any locality should be educated through the medium of Urdu or of the local vernacular the opinion of the majority of the Mahomedans in the locality should be accepted.

If they declare in favour of Urdu and there are not less than 25 children, a separate school or class should be provided, but if there are less than 25 children they should be required to attend the ordinary school and receive instruction through the medium of the local vernacular.

8. Depressed Classes.

At present comparatively few children of the depressed classes attend school. In the towns and in a few large villages in the Presidency proper, special schools are provided for these classes. In other cases they attend the ordinary schools, but they are rarely admitted on the same terms as other pupils, and are compelled to sit apart in the class room, or in the verandah outside the class room, where they pick up what instruction they can by listening to the teacher through the door or window. In Sind there are very few depressed classes, and the problem hardly arises.

If the depressed classes are brought under a Compulsory Education Act, it is difficult to see how any differentiation between their children and others can be justified. The leaders of these classes are undoubtedly anxious for the introduction of compulsory education, and realise that it is essential for their

well-being and progress. They do not want to be exempted from attendance at school, and some of them go so far as to ask that compulsion should be applied to them even it is not introduced for other castes.

The question therefore arises whether the time has come for Government to insist on absolute equality of treatment for all classes of children in schools under public management.

We have received a great deal of evidence from witnesses of all classes on this point, and the right of the depressed classes to primary education on the same terms as others is generally conceded, but doubts have been expressed as to the expedience of making a revolutionary change immediately.

The prejudice against the depressed classes is said to waning, slowly in the villages but more rapidly in the towns. At the same time it has been alleged that many who support the claims of the depressed classes in public will work against them in private, and while passing resolutions in favour of their admission to all schools will try to exclude them from particular ones. Some of the witnesses whom we believe to be sincere friends of the depressed classes strongly advocated a cautious policy. They pointed out that an attempt to force the pace is likely to bring about a reaction, and the slow progress of years may be undone in a day. We realise the force of their argument and hesitate to advise a course of action which may in the end do more harm than good. It is on the grounds of expedience only, and in what we believe to be the best interests of the depressed classes, that we suggest a cautious policy.

We may sum up our conclusions as follows:—

We recognise the principle of equality in education, viz., *that children of the depressed classes should be admitted to ordinary schools on the same terms as others, but in view of the evidence before us and of experience generally in the Presidency and especially in Gujarat, we are prepared to agree to their sitting in the same class room but apart from other children in the beginning, if popular feeling demands it. We do not consider, however, that they should on any account be made to sit outside the class room or in verandahs. Special schools should be provided where there are at least 20 pupils, and there is a strong local prejudice against admitting the children of the depressed classes to the ordinary schools.*

We make these concessions to prejudices which are of very long standing, as we fear that an attempt to force the pace may cause a reaction and an outburst of opposition, but we trust that the spread of education among the masses will result in the gradual breaking down of caste prejudices.

We also suggest that in case a municipality introduces compulsory education by wards or sections of the town, care should be taken to see that the wards or sections chiefly inhabited by the depressed classes should be included in the scheme at as early a date as possible.

9. Abolition of Fees.

We look upon free education as the natural corollary of compulsory education. The fee receipts in primary schools amounted to a little over 5 lakhs of rupees in 1920-21 and averaged about 10 annas per pupil, and were considerably less in the case of Local Board Schools. Liberal provision is made for exempting the children of poor parents, and the rules provide that no child shall be kept from school through inability to pay fees.

Apart from the loss of income, the main difficulty in abolishing fees is in connection with the aided schools, some of which depend to a considerable extent on this source of revenue. While we understand that the more popular aided schools will still be able to charge fees even if free schools are provided in the vicinity, we realise that it may be necessary in some cases to compensate the managers of efficient schools for the loss of fees. Unsatisfactory schools would probably have to close down.

We recommend that primary education should be free up to and inclusive of Standard IV or as long as a pupil is within the limits of age for compulsory

education. An aided school may be permitted to charge fees unless it is the only school of its kind in the locality and has been registered for the purposes of a Compulsory Education Act.

10. Free Books and Slates.

We doubt whether it is feasible to supply books, slates, &c., to all pupils. To do so would be to add very materially to the cost of primary education.

We recommend that local authorities should be required to make provision for the free supply of books and slates for the children of those parents who are proved to be unable to pay for them.

CHAPTER V.

PROGRAMME FOR THE INTRODUCTION OF COMPULSORY EDUCATION.

We now proceed to consider the fourth of the terms of reference which requires us to submit a definite programme showing the various steps which should be successively taken so that a complete system of free and compulsory education may be introduced within a certain definite period.

1. Time Limits.

While the backward communities, at any rate those from the Marathi and Kanarese districts, are anxious for the universal introduction of compulsory education at once and deprecate any time-limit, the majority of the Committee consider that the difficulties to be encountered are so serious as to make the immediate introduction of universal compulsion impossible. They advocate that it should be introduced gradually according to a definite time-table.

2. Localities.

There is a marked difference of opinion as to the order in which compulsion should be introduced into different areas. The majority of the witnesses favoured following the line of least resistance and introducing compulsion into City Municipalities first, gradually extending it to the smaller towns and to the villages.

They based their opinion on the grounds that the City Municipalities are more ready for compulsion, that it will be administratively easier, and that the effect of compulsion in cities will spread and make itself felt in the less advanced areas. On the other hand the witnesses from the backward communities urged in forcible terms that compulsion should be introduced first into the backward localities where the need is greatest. To begin with City Municipalities is to "give food to those already full and to starve the hungry."

The Committee are not unanimous on the point, but the scheme which we put forward represents the views of the majority.

We are of opinion that compulsion should be introduced first in Municipal and other areas in which there are already schools, and completed within a definite period, schools being opened meanwhile on a voluntary basis in other areas.

3. Programme for Boys.

We make the following recommendations regarding the introduction of compulsory education for boys :—

(a) *Compulsion for boys should be introduced into City Municipalities, including those in Sind, within five years, but steps should be taken to*

apply it to at least 20 per cent. of the children now out of school in each Municipality in each year. Municipalities may, however, introduce compulsion immediately or reduce the period to less than five years.

It is intended that Municipalities should be allowed to introduce compulsion into certain wards only at the beginning, gradually extending the area from year to year.

(b) (i) *In non-City Municipalities including those in Sind, and in villages which already possess a school in the Presidency proper, compulsion should be introduced within seven years, one-seventh of the villages in each taluka being brought under compulsion in each year.*

It has been pointed out in Chapter II that about two-thirds of the population of the Presidency proper live in towns or villages already provided with schools, and although all the children will not be within one mile, or whatever distance is fixed, of a school, a large proportion are likely to be provided for under this recommendation.

It is doubtful whether this proposal can be applied to villages in Sind, for which Province we suggest the following :—

(ii) *In Sind compulsion should be applied to such villages or groups of villages as the local education authority may decide.*

(c) *Schools on a voluntary basis should be opened each year in one-tenth of the school-less villages in each taluka in the Presidency, including Sind, provided that the villages are prepared to produce 30 children of school-going age,* i.e., *between the ages of 5 and 10.*

Compulsion may be introduced into any village, subject to the sanction of the local education authority, provided that two-thirds of the cess-payers and rate-payers desire it.

If this programme is carried out, every village which wants a school and in which there are sufficient boys to justify one will be given a school within 10 years. Further if the people so desire, compulsion may be introduced into these villages, but it has been thought necessary to make this subject to the sanction of the local authority in case additional expenditure is involved.

It has also been suggested that compulsion should be introduced into such villages three years after a school has been started, if the people have not already applied for it.

We are not certain that this is feasible, but we are prepared to leave it to the discretion of the local education authorities.

We suggest that local education authorities should be empowered to introduce compulsion into villages which have no school at present three years after a school has been started in the village, if funds permit.

4. Sparsely populated areas.

It is calculated that only about 10 per cent. of the people live in villages of less than 250 inhabitants. It is unlikely that sufficient children will be found in such villages to justify the opening of a school. Various expedients have been suggested for dealing with such villages, *e.g.*, the employment of itinerant teachers who would hold school in one village for a month, in another the next month and so on. Such schemes are not likely to be very effective.

We consider that in the beginning it will be wiser to concentrate on providing schools for the larger villages and bringing as many children in well populated localities under compulsion as possible. When this has been successfully accomplished, attention may be devoted to the sparsely populated areas. In the meantime private enterprise should be encouraged in such areas.

5. Details of the Programme for Boys.

We will now apply the above proposals to the table given in Chapter II, page 6, part of which may be repeated here.

Boys to be provided for :—

[In thousands.]

	Presidency.	Sind.	Total.
City Municipalities ...	43	16	59
Town Municipalities ...	25	6	31
Villages with schools ...	2,48	1,10	3,58
Villages in which schools can be opened.	1,85	14	1,99
Total	5,01	1,46	6,47

As pointed out previously, the actual number of children of school-going age is nearly 15 per cent. of the population, but we have allowed for exemptions and fixed 12½ per cent. only.

In a few villages in the Presidency there are aided schools only, and it may be necessary to start a Local Board school before compulsion is introduced. On the whole it appears that we may reasonably expect that compulsion will bring in 12½ per cent. of the male population in the villages in the Presidency which have schools already, as well as in Municipal areas.

In Sind it is not proposed to apply compulsion on any definite plan, and it would not be safe to reckon on more than half the children in villages with schools being brought in.

New schools will be opened on a voluntary basis in school-less villages which can produce 30 boys. It is expected that 3,000 or 4,000 schools will have to be opened, some probably in large scattered villages where there is already one school.

In the Presidency, we may perhaps expect that one-half of the boys in these villages will join a school, and in Sind one-third.

It will be necessary in Sind to encourage the development of Mulla schools *pari passu* with the opening of new Local Board schools.

The total number of boys who may be expected to join school during the next ten years will therefore be :—

[In thousands.]

	Presidency.	Sind.	Total.
City Municipalities ...	43	16	59
Town Municipalities ...	25	6	31
Villages with schools ...	2,48	55	3,03
Villages in which schools will be opened.	93	5	98
Total ...	4,09	82	4,91

The net result of our proposals will be to increase the total attendance of boys of school-going age by nearly 5 lakhs in 10 years. There will then be in all about 80 per cent. of boys at school in the Presidency and 60 per cent. in Sind.

It will be noted that the bulk of the increase is in villages which already have schools.

We may summarise the effect of our proposals as follows:—

If the programme which we have suggested is carried out, we estimate that two-thirds of the male population will become subject to the provisions of a Compulsory Education Act, and that about 80 per cent. of boys of school-going age in the Presidency and 60 per cent. in Sind will be attending school at the end of 10 years.

6. Programme for Girls.

The number of girls of school-going age who are not attending school, but live in areas where there are schools or where schools may be expected to flourish, is given in the table in Chapter II, page 6, part of which may be repeated—

[In thousands.]

	Presidency.	Sind.	Total.
City Municipalities ...	59	14	73
Town Municipalities ...	47	6	53
Villages with schools ...	4,37	1,07	5,44
Villages in which schools can be opened.	1,85	14	1,99
Total ...	7,28	1,41	8,69

It has been proposed that except in City Municipalities education for girls should be developed on a voluntary basis. In City Municipalities they should be brought under compulsion within 7 years.

There are about 73,000 girls in City Municipalities to be provided for but as exemptions are more likely to be necessary in the case of girls than of boys, it may be safer to deduct 10 per cent. leaving 65,000 as the number likely to join school during the 7 years.

Although it is not proposed to apply compulsion in other areas, it is left to the people to apply it if they so desire, and it is likely that compulsion will be brought into operation in a number of Town Municipalities, if not in rural areas. In fact, if funds permit, it may be possible to apply compulsion to all Town Municipalities within 10 years. Out of the 53,000 girls in such areas, we may perhaps reckon on 40,000 joining school during this period.

As regards rural areas, it must be pointed out that in the majority of the villages with schools, the schools are primarily intended for boys. There are close on 600 Local Board girls' schools with 34,000 pupils, of whom a few are boys, while about a lakh of girls in all attend schools in rural areas, of whom about 66,000 are of school-going age.

We suggest that an attempt should be made to bring in one lakh of girls of school-going age within 10 years, *i.e.*, 10,000 each year. For this purpose new schools will have to be opened, but it is probable that owing to the dearth of suitable teachers more can be done by encouraging girls to join boys' schools than by opening new schools.

It is not possible to work out a satisfactory programme for expansion on a voluntary basis, especially in Sind, where it will be necessary to trust largely to Mulla schools for Mahomedan girls, as so much depends on the response of the people. New schools may be opened, but there is no guarantee that girls will attend them.

It must be left to each local education authority to devise its own scheme of expansion, which may have to be modified from time to time. The aim should be to add in all about 10,000 girls every year.

The effect of our proposals will be to increase the number of girls of school-going age at school within 10 years as follows:—

[**In thousands.**]

	Girls of school-going age now at school.	Girls to be provided for.	Total.
City Municipalities...	25	65	90
Town Municipalities.	11	40	51
Rural areas ...	66	1,00	1,66
	1,02	2,05	3,07

As regards the education of girls, we find it difficult to put forward a definite programme, but we suggest that compulsion should be applied to girls in City Municipalities within 7 years, and where possible in Town Municipalities. We anticipate that this will result in an increase of about one lakh of pupils within 10 years.

In rural areas, we consider that primary education for girls should be developed on a voluntary basis, and that the aim should be to add 10,000 pupils annually by opening new schools or in other ways.

7. Cost of each Pupil in a Primary School.

Before working out the cost of our proposals, it is necessary to estimate the average cost of each pupil. It is assumed that the whole of the additional expenditure will fall on Government, District Local Boards and Municipalities.

During 1920-21; the average cost of each pupil in a Local Board School was Rs. 14-8, towards which Government contributed Rs. 12-6. These figures are obtained by dividing the expenditure by the average number of pupils on the rolls. They vary a good deal. In the Central Division the average was Rs. 13-5, while in Sind it was as high as Rs. 22-3.

In Municipal schools, the cost was higher, and in Bombay City it reached Rs. 46 per pupil.

The pay of teachers was raised in September, 1920, and again in April, 1921. The former increase was in operation for six months only in 1920-21, and the latter was sanctioned after the close of that year. Consequently a further increase in the cost of each pupil may be anticipated in 1921-22, which will probably bring the figure for Local Board schools to over Rs. 17.

It must be remembered that all the trained teachers are on incremental scales of pay, and the cost will, therefore, tend to rise steadily. To some extent this will be counterbalanced by savings owing to death and retirement.

The cost of management and inspection has also to be considered. This amounted to over Rs. 10½ lakhs in 1920-21, of which two-thirds or Rs. 7 lakhs may be debited to primary education or about Re. 1 per pupil. The revised estimate for 1921-22 was Rs. 13 lakhs, and in the budget for 1922-23 the provision has been raised to Rs. 16 lakhs.

When new schools are opened, expenditure on equipment is necessary in the first year, amounting on the average to Rs. 2 or Rs. 3 per pupil. This still further increases the average cost.

On the whole it would appear that in the beginning each pupil is likely to cost not much less than Rs. 20, including management and inspection.

It is a question whether this amount can be reduced. At present each teacher in a Local Board school has 28 pupils on the average, but it must be

remembered that he has frequently to teach 3 or 4 classes. With the introduction of compulsion the classes are likely to become considerably larger, and if a master has only one class there is no reason why he should not teach 35 to 40 boys. Further, the pupils brought in under compulsion will be in the lower classes of the school, and it will not be necessary to maintain as high a proportion of second and third year trained teachers as at present. The introduction of the "shift system" which is described in Chapter VIII, is calculated still further to reduce the number of teachers required and the cost. On the other hand a good many village schools which now have one teacher require two. It is also possible that when local authorities recruit their own teachers and fix their own scales of pay, subject to certain minima, the cost of teachers may be still further lowered. Some economy may be effected in the cost of management and inspection, and increased numbers should reduce the average amount of such charges. The encouragement of private enterprise may also help in the task of retrenchment.

It will perhaps be safe to take Rs. 20 as the inclusive cost in the first year of the programme, and to allow for a slow but steady reduction, say 8 annas each year, bringing the figure down to Rs. 15-8-0 in the tenth year, and Rs. 15 afterwards.

The cost of a new school may be taken as Rs. 600 in the first year including cost of equipment, and Rs. 500 afterwards, but in calculating the cost of opening new schools, the total number of pupils likely to join has been considered and not the cost per school.

8. Cost of the Programme for Boys.

The programme for boys involves the introduction of compulsion in City Municipalities within 5 years, and in other Municipalities and in villages with schools within 7 years, and the opening of 3,000 or more schools during the next 10 years.

So far we have considered only pupils of school-going age. At present about one-third of the pupils in primary schools are below or above the compulsory limits, and although it is proposed to empower local authorities to refuse to admit children below the age of 5, it may reasonably be expected that a number of pupils will remain at school after the age of ten. We have, therefore, in calculating the cost of our programme allowed for an additional 20 per cent. of pupils, over and above those of school-going age.

The following table shows the additional cost of the programme in each of the 10 years, including children outside the compulsory limits, calculated at Rs. 20 per pupil in the first year, Rs. 19-8-0 in the second year and so on. Although City Municipalities have been allowed 5 years in which to introduce compulsion, provision is made for their doing so within 3 years :—

[In thousands of rupees.]

Year.	Average cost per pupil.	City Municipalities.	Town Municipalities.	Villages with schools.	New schools.	Total.
	Rs. a. p.					
1	20 0 0	4,56	1,20	10,56	2,16	18,48
2	19 8 0	9,13	2,10	20,36	4,44	36,03
3	19 0 0	13,45	2,96	29,64	6,61	52,66
4	18 8 0	13,10	4,00	38,63	8,65	64,38
5	18 0 0	12,74	4,75	46,87	10,58	74,94
6	17 8 0	12,40	5,46	54,60	12,18	84,64
7	17 0 0	12,04	6,32	61,81	13,87	94,04
8	16 8 0	11,69	6,13	60,00	15,44	93,26
9	16 0 0	11,33	5,95	58,18	16,89	92,35
10	15 8 0	10,98	5,76	56,36	18,23	91,33

It will be seen that by far the largest share of any increased expenditure will be devoted to rural areas, mainly to introducing compulsion into villages which already have schools.

Part of the additional cost will be met by Municipalities and by District Local Boards. The distribution of the expenditure between these bodies and Government is worked out in para. 10.

9. Cost of the Programme for Girls.

It is hoped that an additional 65,000 girls in City Municipalities will join a school within 7 years, and that there will be an additional 40,000 girls in Town Municipalities and one lakh in rural areas joining within 10 years.

Taking the average cost per pupil at the same rate as for boys, and allowing for 20 per cent. of pupils outside the compulsory limits of age, we arrive at the following statement showing the additional cost in each of the ten years:—

[In thousands of rupees.]

Year.	City Municipalities.	Town Municipalities.	Rural areas.	Total.
1	2,16	0,96	2,40	5,52
2	4,00	1,78	4,44	10,22
3	6,38	2,74	6,84	15,96
4	8,22	3,55	8,88	20,65
5	9,94	4,32	10,80	25,06
6	11,76	5,04	12,60	29,40
7	13,26	5,71	14,28	33,25
8	12,88	6,34	15,84	35,06
9	12,48	6,91	17,28	36,67
10	12,10	7,44	18,60	38,14

10. Total Additional Cost of the Programme.

(*a*) It is assumed that City Municipalities will meet half the cost of primary education and Town Municipalities one-third.

It has been suggested that an additional Local Fund cess and a tax on non-agricultural incomes between Rs. 500 to Rs. 2,000 should be levied in rural areas in which compulsion is introduced.

The proceeds of the former taxation are estimated at between Rs. 25 and 35 lakhs, but no reliable data are available for the latter. It may be assumed that in all about Rs. 30 lakhs will be available for the Presidency as a whole. According to the programme about two-thirds of the total area will be brought under compulsion and we may, therefore, reckon on an additional Rs. 20 lakhs from local taxation. It is assumed that Rs. 2 lakhs will be collected in the first year, 4 in the second and 6 in the third and so on. If the local taxation could be levied in all villages which are provided with a school, the yield would be very much higher, especially at the start.

(*b*) It is necessary to know the present expenditure on primary education. Unfortunately the statistics for primary education in 1921-22 are not yet available, but as the cost per pupil is bound to be very much higher than in 1920-21

it appears to be wiser to take the revised budget estimates for 1921-22 rather than the actuals for 1920-21. The contribution of Government for primary schools is Rs. 104 lakhs, excluding Bombay City. If fees are abolished, an equivalent amount will have to be provided by Government for Local Board schools, and probably some compensation will have to be given to aided schools, say Rs. 50,000. The total will come to about Rs. 2½ lakhs. The cost of inspection is estimated at Rs. 13 lakhs, of which two-thirds or Rs. 8½ lakhs may be debited to primary education.

The total Government contribution in 1921-22 may, therefore, be taken as Rs. 115 lakhs. The same figure was arrived at by taking the statistics for 1920-21 and assuming that the cost of a pupil in a Local Board or Municipal school was Rs. 20.

In calculating the cost of expansion we have assumed that the average cost of a pupil will be Rs. 20 in the first year and will decrease by 8 annas in each successive year. Consequently the cost of existing schools should be reduced by 2½ per cent. each year or by Rs. 2·9 lakhs.

Another item which has to be considered is the expenditure on training institutions which is estimated at Rs. 8·1 lakhs in 1921-22. This may be expected to rise to Rs. 15 lakhs at the end of 10 years, say by Rs. 70,000 annually. The whole of this has been debited to Government although probably the Municipalities should bear their share.

(*c*) So far nothing has been said about buildings. This question will be considered in greater detail in para. 13, but we may here state that for a number of years we shall have to rely mainly on public and rented buildings and on cheap structures put up by the villagers, possibly with the help of a grant from the local authority. Better buildings will be required in Municipal areas.

We suggest that Rs. 5 lakhs be provided annually by Government for buildings, of which one lakh may be reserved for Municipal schools. As the Municipalities would be expected to contribute an equal amount, the total provision for Municipal schools would be Rs. 2 lakhs annually or Rs. 20 lakhs in 10 years. For Local Board schools the annual provision would be Rs. 4 lakhs, or Rs. 40 lakhs in 10 years, in addition to what is available from the balances of the District Local Boards. We suggest that a special building fund should be created and that amounts budgetted in any year should not lapse but be carried over to the next year. To this fund might also be credited any savings in the allotment for recurring charges.

(*d*) We are now in a position to estimate the additional expenditure on account of our programme in each of the 10 years, and the distribution of the cost between Government, Municipalities and District Local Boards. In calculating the amounts for Municipalities an allowance has been made for the loss of fees, which in Municipal schools will fall entirely on the Municipalities, and for the gradual reduction in the cost of existing schools.

We estimate the additional expenditure involved by our programme as follows:—

[In lakhs of rupees.]

Estimated expenditure in 1921-22.

Municipalities.	District Local Boards.	Government.
14	9	1,23

Estimated *additional* expenditure in each of the ten years.

Year.	Municipalities.	District Local Boards.	Government.	Total.
1	5	2	21	28
2	8	4	35	47
3	12	6	49	67
4	13	8	60	81
5	14	10	70	94
6	14	12	78	1,04
7	15	14	86	1,15
8	14	16	83	1,13
9	14	18	80	1,12
10	13	20	77	1,10

These amounts include an annual provision of Rs. 6 lakhs for buildings and an annual increase of Rs. 70,000 for training institutions. The cost of management and inspection is also included.

It may here be repeated that it is anticipated that the number of boys at school will increase from 6,00,000 to 10,69,000 including those outside the compulsory limits of age, and of girls from 1,53,000 to 3,68,000.

About 70 per cent. of the additional expenditure is on account of boys and 30 per cent. on account of girls.

(*e*) It is evident from the above table that the increased expenditure will be heavy at the start, but will reach a maximum in the seventh year, after which it will decline slightly.

The whole estimate depends on a steady decrease in the average cost of each pupil. It ought to be possible to achieve this if rigorous economy is insisted on as far as it can be without undue sacrifice of efficiency, but not otherwise.

It is essential that the average cost of each pupil should be scrutinised very carefully each year, as it affords a safe guide in checking extravagance.

How far our programme is practicable from the financial point of view is a question which we are not in a position to answer definitely. Government in the tenth year would have to provide a total amount of exactly 2 crores for primary education excluding any grants which may be awarded to Bombay City. The amount over and above the estimated provision in 1921-22 is 77 lakhs and to raise this sum ought not to present insuperable difficulties.

11. Need for a Programme for Each District.

The above proposals refer to the Presidency as a whole. To determine the requirements of each district it will be necessary to make a survey on similar lines to those followed in this report. The aim should be to ensure that at the end of 10 years each district has approximately the same percentage of children under instruction. It may not be possible to ensure as high a standard in Sind as in the rest of the Presidency, owing to the fact that we do not propose that compulsion should be applied there generally within a definite period.

It will be necessary to prepare a detailed programme for each district and the additional funds provided by Government should be distributed in accordance with these programmes.

12. Supply of Teachers.

It is proposed to add 4·69 lakhs of boys and 2·15 lakhs of girls in 10 years, an average of 70,000 pupils annually. The question arises whether sufficient teachers will be available.

As pointed out elsewhere, the average number of pupils per teacher was only 28 in 1920-21, and the introduction of complusion will result in larger classes. The reduction of hours proposed as part of the shift system will also enable one teacher to take considerably more pupils.

There were 24,773 teachers in Government, Local Board, and Municipal primary schools on 31st March, 1921.

If the average number of pupils per teacher is raised from 28 to 35, it will be possible to provide for 1,70,000 more pupils without increased staff. If this increase is spread over 10 years, 17,000 may be deducted from the average annual increase of 70,000 pupils leaving 53,000. For these 1,500 teachers will be required at the rate of 35 pupils per teacher. The increase will probably be greater in the earlier than in the later years, as the programme for Municipalities and rural areas with schools is to be completed in 5 to 7 years.

It is reported by the Divisional Educational Inspectors that they have in all 2,875 candidates for employment on the waiting list, and that nearly 2,800 men who have passed the Vernacular Final Examination are likely to be available annually. Further the spread of primary education will probably result in more candidates appearing for the Vernacular Final Examination from year to year. It has also been suggested that those who have studied for 5 or 6 years in an Anglo-Vernacular School might be found suitable as teachers in primary schools.

It would appear, therefore, that there will, for the Presidency as a whole, be a sufficiently large supply of teachers who have passed the Vernacular Final Examination to enable our programme for boys to be carried out. There may be a shortage in particular districts and it may be necessary to appoint men not specially suitable for the teaching profession, but difficulties must be expected in the beginning, and the provision of teachers does not appear to be in any way an insuperable one.

As regards girls, suitable women teachers are not likely to be available in sufficient numbers, and it will be necessary to make use of elderly men teachers and pensioners. Fortunately there is no serious objection to girls attending boys' schools up to the age of 10 or 11, and in rural areas the majority of girls brought under instruction will probably have to attend boys' schools.

13. School Buildings.

The other question which needs to be considered in connection with our programme of compulsory education is the supply of school buildings.

At present a few schools are provided with well built and convenient school houses, but the cost of building has risen to such an extent that the estimate for new school buildings works out at from Rs. 75 to Rs. 125 per pupil. This estimate has, however, been reduced to Rs. 35 or Rs. 40 in new plans for schools of the open air type. Such buildings are out of the question on a large scale and it will be necessary to rely on Dharamashalas, temples, rented houses, and cheap structures erected by the villagers, possibly with the help of a small grant.

Much will depend on the enthusiasm of the people, and it should be considered one of the chief duties of the Panchayats and School Committees to provide adequate and suitable accommodation for the school. Light and air are the chief requisites.

For larger villages and Municipalities it may be necessary to provide buildings out of loans, repayable in 15 to 20 years, interest and sinking fund contribution being paid annually.

In our programme we have provided for an expenditure of Rs. 6 lakhs annually on buildings, Rs. 5 lakhs being provided by Government and one lakh by Municipalities, in addition to what the District Local Boards can provide from their balances.

CHAPTER VI.

FINANCE AND TAXATION.

1. Financial Position of Primary Education.

(i) As pointed out in para. 5 of Chapter II, all additional expenditure on primary education will have to be met from the resources of Government and of the District Local Boards and Municipalities. The share of Government has been calculated at 70 per cent.

Before discussing additional taxation, whether provincial or local, it is necessary to consider the question of finance more generally in view of the present condition of the revenues of the Presidency.

It must be pointed out that there are at present something like 25,000 primary teachers employed in Government, Local Board, and Municipal schools. These are all on fixed scales of pay and have all the rights and privileges of Government servants as regards pension, leave, and security of tenure. Although it is proposed that all new teachers in Local Board and Municipal schools should be considered as the servants of these bodies and not of Government, and that it should be left to these bodies to fix the pay of teachers, subject to certain minimum rates, no great saving can be expected in this direction, at any rate, for some years. Practically the whole of the expenditure on primary education at present is obligatory, and although it may be found feasible to effect some economies in the present system, once they have been carried out it will not be possible suddenly to reduce the allotment for primary schools because the revenues of Government in a particular year are below what was expected. Once a school has been started, especially if compulsion has been introduced, it cannot very well be closed, and the only source of retrenchment would be a reduction in the pay of teachers. This would be a course which is strongly to be deprecated, and in any case it could not be adopted periodically.

We wish, therefore, to emphasise the fact that any additional grants for primary education must be of a recurring nature, and not subject to reduction in any succeeding year, and that any programme for the introduction of universal compulsory education necessarily involves a gradually increasing expenditure reaching a maximum in a certain term of years. A system of hand to mouth finance would be fatal to the success of any scheme propounded.

(ii) It may be useful to study the financial arrangements for education in England. These may be described briefly as follows:— Government provides approximately half the cost and the local authority, *i.e.*, the County or Borough Council, the remainder. The procedure is simple. The local authority estimates the expenditure necessary in a particular year, calculates the Government grant which may be expected, and arranges to provide the rest of the money by taxation. Both Government and the local authorities have, or had, 'flexible' sources of taxation, *i.e.*, taxation which can be readily increased or decreased by a fixed amount. Government can increase the Income tax or the Customs and Excise duties, while the local body can modify the rate of house tax. The rateable value of every area is known, and the rate to be levied in the £, necessary to provide a particular amount, can at once be calculated.

(iii) the question at once arises, whether similar 'flexible' sources of taxation, local or provincial, are available in India. There is the house tax in Municipal areas, but the application of this tax to rural areas is not feasible, as the power of levying such a tax has been assigned to the Panchayats, and the amount realised, which is not likely to be large, can be expended for other purposes. The Local Fund cess could perhaps be raised within well defined

limits, but the yield would not be very large. The other taxes which can be readily increased or decreased are the Income tax, Customs duties and the Salt tax. All these taxes are reserved for the Central Government.

We realise the difficulty of the position, but it would obviously be extremely unwise to embark on any programme of compulsory education unless there is a reasonable assurance that the necessary funds will be available from year to year.

We wish to record our opinion that, so far as the provision of funds sufficient to maintain the past year's standard of progress at least is concerned, both Government and the Legislative Council should bind themselves so far as possible to the necessary programme of expenditure for the future on the scale approved. We suggest that this can best be secured by Government's submitting proposals for appropriation for such service in the form of a scheme, involving recurring and increasing expenditure, which can be adopted by the Legislative Council. This will in effect bind both Government and the Legislative Council to ask for and grant respectively all future demands for grants necessary to maintain the standard of expansion once approved, subject only to financial exigencies of a serious character. Any demand for increased grants to cover a further expansion of primary education will remain for the consideration of Government and the Legislative Council at each budget meeting as in the case of any ordinary appropriation.

2. Additional Sources of Revenue.

Although several members considered that it is the business of Government to provide the funds necessary for compulsory education by retrenchment or otherwise, the majority are prepared to suggest some additional sources of taxation.

We suggest the following :—

(1) *Death duties and succession duties (provided further enquiry shows them to be feasible).*

(2) *Increase in registration fees.*

(3) *An entertainment tax on theatres, cinematographs, horse-racing (including totalisator), &c.*

(4) *A tax on Inamdars and Jahagirdars.*

(5) *A tax on Devasthanas.*

(6) *A tax on stock exchange transactions.*

(7) *A tax on trades and industries to be used for the education of factory children.*

(8) *Such surcharge on income tax and super-tax as may be found feasible.*

(9) *An additional local cess on land revenue on a graduated scale of six pies to two annas in the rupee.*

(10) *A tax on non-agricultural incomes between Rs. 500 and Rs. 1,999, on the following scale:—*

Rs. 500 749	...	*1½ pies.*
Rs. 750—999	...	*2 pies.*
Rs. 1,000—1,499	...	*3 pies.*
Rs. 1,500—1,999	...	*4 pies.*

The majority of the Committee recommended that such special taxation as is levied should be earmarked for compulsory primary education.

Items 9 and 10 are local taxation which would be levied by the District Local Boards with the sanction of Government. We suggest that this additional local taxation should be levied in each area as it is brought under compulsion.

There was a considerable difference of opinion among witnesses regarding an increase in the Local Fund cess, but the majority of the Committee consider that part of the cost of introducing compulsory education should be met by additional local taxation.

3. Contributions of Local Authorities.

The principle of Government giving a grant to Municipalities equal to a fixed proportion of the expenditure on primary education is accepted. The case of the District Local Boards, however, is much more difficult. As pointed out above Government now pay the whole cost of primary education in rural areas less one-third of the Local Fund cess and fee receipts.

We have considered carefully the various suggestions made in Mr. Martin's report (Report of the Special Officer on Local Self-Government in the Bombay Presidency, 1918) for the levying of local taxation by District Local Boards or District Councils, as it is proposed to call them. Beyond an increase in the Local Fund cess and a tax on non-agricultural incomes between Rs. 500 and Rs. 1,999, there do not appear to be suitable forms of local taxation which are likely to bring in a very large amount. The income from the former is estimated at 25-35 lakhs, but no estimate for the latter has been made.

The amount which is likely to be realised is a comparatively small fraction of what is required for compulsory education in rural areas.

The second difficulty which arises is the marked inequality in the resources in the different districts. A Local Fund cess of one anna on the land revenue is calculated to bring in 7 annas per head of the population in Broach, and 11 pies only in Ratnagiri.

If compulsion is introduced, the cost of primary education in each district will be approximately proportional to the population. As long as the imposition of a particular local tax brings in seven or eight times as much per head in Broach as in Ratnagiri, it is difficult to see how the provincial grant to a District Local Board can be fixed at any fraction of the expenditure. Nor are we prepared to allow the poorer districts to lag behind on account of their poverty.

Our recommendations may be summarised as follows:—

We consider that the introduction of compulsory primary education should as far as possible proceed at the same pace in all districts, and that the general principle to be followed as regards grants should be that in non-City Municipalities and rural areas the Municipality or District Local Board should contribute one-third of the cost, and Government two-thirds, but in order to maintain a uniform rate of progress Government should assist individual districts according to their needs.

In the case of City Municipalities Government should contribute one-half or two-thirds of the expenditure according to the needs of the Municipalities.

We have not succeeded in devising a formula for determining the Government grant according to the needs of a particular district, but in awarding a grant it will be necessary for Government to satisfy themselves that adequate local taxation has been levied and collected, and that there has been no undue extravagance in the management of the schools. As has already been pointed out, a careful scrutiny of the average cost per pupil will be necessary every year, and ultimately it may be possible to award grants on a capitation basis.

It may be mentioned that the difficulty of distributing educational grants to local bodies is not peculiar to Bombay. The question is being re-considered in England in connection with retrenchment. In the United States of America, there are remarkable variations in what is done in the different States, each of the following bases being used for the computation of the grant:—school population, school attendance, number of schools maintained, number of teachers employed, valuation of taxable property, and inverse property valuation. The last two items may require explanation. Some States award grants proportional to the rateable value of the property in the local area, while others award them in the inverse ratio; in other words according to one system Broach would get 7 or 8 times as large a grant as Ratnagiri and according to another it would get a great deal less.

4. Payment of Grants.

At present grants to Municipalities are calculated on the expenditure of the previous year, while those to District Local Boards are intended to meet expenditure in the year in which the grants are made.

We consider that the grants paid to a local authority in any year should be based as far as possible on the expenditure of that year, adjustments being made where necessary in the following year.

There are, however, serious administrative difficulties in awarding grants in any year based on the expenditure of that year or even on that of the previous year. For instance, the Budget for a particular year, say 1923-24, must be prepared by Government by the end of 1922, when the full expenditure for the previous year has not been incurred.

An attempt is made to meet this difficulty in the following scheme:—

Each local authority should submit a preliminary Budget for 1923-24 not later than September, 1922. These Budgets would have to be scrutinised in the light of the data available, *viz.*, the expenditure for 1921-22, the expenditure for the first 6 months of 1922-23, and the programme of compulsory education, or such modifications of it as may have been approved. Extravagance also would have to be checked. In this way, the amounts approved for each local authority in 1923-24 could be calculated, the total being the amount to be provided by Government in the Provincial Budget. If this exceeds what has been provided in accordance with the general programme of compulsory education, it would be necessary to reduce the allotments for each local authority, and they should be informed immediately of the amounts actually sanctioned to enable them to modify their own Budgets. It ought to be laid down that the sanctioned allotments must not be exceeded and that local authorities must frame their Budgets accordingly. As soon as the accounts of a particular year have been audited, the necessary adjustment in the grant for that year can be made. The grants for any year being maxima, these adjustments would be made only in cases in which the grant had not been earned by the local authority. Deductions would have to be made from the next year's grant. These deductions, which would be in the nature of savings, could be used to supplement any allotment for building grants to primary schools, or to meet an unexpected fall in the receipts from the Local Fund cess in districts affected by famine.

Half of the grant sanctioned for a local authority should be paid at the beginning of the financial year and the rest in September or October, after the necessary adjustment of the previous year's grant has been made.

CHAPTER VII.

ADMINISTRATIVE AND LEGISLATIVE MEASURES.

The third of the terms of reference is as follows:—

To make detailed proposals for any legislative and administrative measures necessary for the purpose, including the machinery required to carry out any such measures.

It is necessary in the beginning to consider the whole question of the administration of primary schools.

1. Present Position as regards Management of Primary Schools.

(*a*) Municipal Schools.

The regulations for the management of Municipal primary schools are to be found in the Bombay District Municipal Act and in the rules made under this Act.

Municipalities are required by the Act to make reasonable provision for establishing and maintaining primary schools.

The following extracts from the rules will explain the relations between Government and the Municipalities as regards management :—

The principles and system of school management, the course of instruction to be followed, and the rates of salary to be given to the various grades of masters and mistresses, shall be those prescribed by the Educational Department in the various rules and regulations issued by them. Municipal schools shall be open to inspection and examination at all times by the Government Inspecting Staff. In all questions relating to pension, leave, pay, and acting allowances the rules from time to time applicable to Government Servants in the Educational Department shall be applicable to every member of the school establishment who has been or may be transferred from the Educational Department and who was permanently employed by that Department on a salary of more than Rs. 10, or who having been employed by a Municipality at first on a salary of Rs. 10 or under, was subsequently paid more than Rs. 10.

Subject to the above conditions the appointment, promotion, suspension, and dismissal of all members of the establishments of Municipal schools shall rest with the Municipality, provided that no teacher shall be dismissed or have his salary permanently reduced or be re-transferred to the Educational Department without the previous sanction of the Municipality (as distinct from the School Committee) and due previous intimation to the Divisional Educational Inspectors.

As the services of such teachers are pensionable it shall be incumbent upon a Municipality before dismissing any such teacher to frame definite charges against him and obtain his explanation in writing.

(*b*) District Local Boards.

The Bombay Local Boards Act lays down that it shall be the duty of Local Boards so far as the Local Fund at their disposal will allow, to make adequate provision in regard to the provision of suitable accommodation for, the visiting and maintenance of, and the training of teachers for primary schools, and the general development and extension of primary education.

The relations between Government and the Local Boards as regards management and control are defined in rules made under the Act.

The following quotation from the last Quinquennial Report of the Director of Public Instruction will expain these relations :—

> " The actual administration of Local Board schools rests with the Government Educational Department, the Boards doing little more than voting the money for their upkeep, deciding on their location, and fixing rates of fees within the general limits of the departmental codes of rules and regulations. Powers as regards teaching and discipline, the appointment, promotion, transfer, punishment and dismissal of teachers, the fixing and payment of masters' salaries, allowances and pension contribution and the grant of leave to masters are exercised on behalf of the District Local Boards by the Department."

It may be explained that there is a common cadre of primary teachers for Government, Municipal and Local Board schools. They are in pensionable service and their pay and allowances, leave rules, &c., are all fixed by Government.

This general interchangeability of teachers is in many ways a convenience but has given rise to friction, especially since the creation of selection grades for teachers.

2. Government Control of Education.

We are of opinion that Government must exercise a general control over education in view of its importance to the well-being of the State. Still more is control necessary in the case of schools receiving grants from Government.

This principle is recognised in all civilised countries and need not be discussed. The right of Government to inspect all recognised or approved schools is a natural corollary.

The following are the main points regarding which the general control of Government is necessary:—

School buildings and equipment, qualifications and number of teachers, attendance and curriculum.

General directions about school buildings and equipment, dealing with floor space per pupil, lighting, ventilation, play-grounds, &c., would have to be issued.

The maximum number of pupils per teacher and the proportion of trained teachers to be employed would also be laid down. Under attendance would be included the number of hours of instruction daily and the length of vacations. The curriculum, or preferably alternative curricula, would be prescribed by Government, but modifications should be permitted with previous sanction. The control of text books is also necessary as Government must retain the power of forbidding teaching of a type likely to create hostility towards or contempt of Government.

A good deal of latitude should be allowed; for instance it might be laid down that there should not be less than three and more than five hours of secular instruction daily, the actual number within these limits being left for the decision of the local education authority.

Control of public examinations, *e.g.*, the Vernacular Final Examination, must be retained.

Government must also reserve the right of calling for returns, statistics, &c.

The question of the pay of teachers and the control of expenditure will be considered later.

3. Control of Primary Education.

The Municipalities already manage their own schools, subject to certain restrictions about the pay and status of the teachers, which are necessary as long as teachers in Government, Municipal, and Local Board primary schools belong to a common cadre and are interchangeable.

We are of opinion that a somewhat greater degree of freedom should be given to Municipalities in this respect, provided that the interests of existing teachers are safeguarded, and new teachers are given reasonable pay and security of tenure. This question will be discussed in greater detail later.

The Educational Inspector manages Local Board schools with the assistance of his Deputies. The majority of the witnesses favoured the devolution to the District Local Boards of powers of control of primary schools similar to those now exercised by the Municipalities, but a few whose opinion is entitled to respect, deprecated making a change in the management, if we are to undertake an experiment of such magnitude and difficulty as the introduction of compulsory education.

We realise the force of this argument but we consider that the handing over of the management of primary schools to the District Local Boards is a measure which should not be further delayed.

There are serious difficulties in changing from a system of Government management to local management but we do not consider that they are insuperable.

We may summarise our views as follows:—

We are of opinion that the local education authorities, i.e., *the District Local Boards and Municipalities, should be given as large a measure of control as possible in the management of primary schools, subject to the general control which Government must exercise.*

4. Local Education Authorities.

It is now necessary to define the expression "Local Education Authority" which we have borrowed from the English Education Acts.

In England the Council of every County, and of every County Borough, and of other Boroughs with a population of over 10,000, or of an urban district with a population of over 20,000, is a Local Education Authority for the purposes of elementary education. In Bombay Presidency all Municipalities, large and small, manage their own schools, and would be classed as local authorities. In practice it is found that many of the smaller Municipalities cannot afford to employ the necessary administrative and clerical staff and the management can hardly be described as efficient. The rules provide for small Municipalities being allowed to entrust the management of their schools to the Educational Department, but comparatively few have taken advantage of this.

The grant of greater powers of control to Municipalities and District Local Boards will make it very difficult, if not impossible, to maintain the present interchangeability of teachers which depends on their being looked upon as Government servants lent to the local bodies. A small cadre of teachers such as would be required by the majority of the Municipalities is very unsatisfactory, owing to the limited number of higher appointments.

The concentration of the management in the District Local Board would also tend to economy as well as to efficiency.

We are therefore of opinion that the District Local Board or District Council, as we propose to call it, following the recommendation of the Lawrence Committee (Report of the Committee on Local Self-Government, 1915) should be the Local Education Authority for all primary schools in the district other than those belonging to City Municipalities and to other Municipalities which are permitted to manage their own schools. We are in favour of the schools of all the smaller Municipalities being managed by the District Council or a Committee thereof, but we feel that some of them may consider that authority which they already enjoy is being taken away from them and for this reason we are disposed to give them the option of continuing to manage their schools directly, subject to the approval of Government.

We are now able to define a Local Education Authority.

The District Councils, City Municipalities, and such non-City Municipalities as have been specially approved by Government shall be the Local Education Authorities for the purposes of primary education within their respective areas.

It will have to be decided whether the neighbouring City Municipality or the District Council should be the local education authority for the schools in Cantonments and Suburban Municipal areas.

The local education authorities should be granted powers similar to those now exercised by Municipalities including any extension of these powers consequent on our recommendations regarding the status of primary teachers (para. 8).

5. School Boards and District Education Boards.

Provision should be made for the delegation of powers by city municipalities and by town municipalities which are local education authorities to School Boards. We suggest that the term 'School Board' should be used in preference to 'School Committee.'

Similarly for the district there should be a District Education Board on which due representation should be given to the various talukas of the district and to the Municipalities which are not themselves local education authorities.

This Board should be partly elected and partly nominated in the proportion of 4 to 1, and the interests of various communities, e.g., Mahomedans and backward classes, and also the education of girls, should be safeguarded by suitable

nominations. Schemes for the constitution of these boards should be framed by the District Council and submitted for the approval of Government.

Large powers should be delegated to the District Education Boards, which would in practice carry on the management of the schools as do the School Committees of the municipalities at the present time.

It has been suggested that some educational qualification should be demanded of members of the District Education Board, but the majority of the Committee do not consider this feasible.

6. Educational Officers of District Education Boards.

We consider that there should be an Educational Officer of the requisite qualifications and experience as Secretary and Executive Officer of the District Education Board, who should be appointed by the Board, subject to the approval of Government. The Educational Officer should be the servant of the Board, although he might be an officer lent by Government. He should exercise such powers as may be conferred upon him by legislative enactment or by rules made under such enactment, which should provide also for the delegation by the Board of further powers.

These recommendations were arrived at after very careful consideration. While we are anxious to give as much control as possible to the Boards, we are of opinion that a good deal of the actual administration must be entrusted to a responsible officer, possessing expert knowledge.

It is not our intention that he should be able to act independently of the Board or contrary to its wishes, but he should carry out in detail the general orders of the Board. The control of the Board will be sufficiently safeguarded, and the provisions we have suggested will allow of further powers being delegated to the Educational officer of the Board if experience shows this to be desirable. It may be pointed out that the tendency both in England and the United States of America is for the influence of the permanent educational official to increase. The Secretaries of the School Boards constituted under the English Elementary Education Act of 1870 were usually men of no educational experience and have been described as being 'little more than head clerical officers,' while the executive officers of the Education Committees of the present local education authorities are almost invariably men who have been previously engaged in educational work. Increased efficiency has been the result of this change.

7. Supervision and Inspection.

At present the Educational Inspector manages Local Board Schools with the assistance of his Deputies, who inspect the schools and report to him. We have recommended that the former function should be transferred to the District Education Boards, and exercised through their executive officers.

The question of inspection is a difficult one. Government must satisfy themselves by inspection of the efficiency of the work done in the primary schools. The District Education Boards are not likely to be content to rely entirely on the reports of the Government inspecting staff, and will wish to have reports on their schools from their own officers. It is obviously undesirable to have two sets of officers doing the same work.

We have considered the proposal made in Mr. Martin's Report on Local Self-Government that the Deputy Educational Inspector should be *ex-officio* Secretary and Executive Officer of the District School Board. In this capacity he would be a servant of the Board, but he would continue to be responsible to the Educational Department for the inspection of the schools. We consider that such dual control is impracticable and we do not recommend it.

We believe that a more satisfactory solution of the problem can be found.

We suggest that the District Education Boards should be allowed to employ their own Inspecting Officers, but to prevent confusion and to emphasise

the somewhat different nature of their functions from those of the Government Inspecting Staff, we propose that they should be called Supervisors. These Supervisors would inspect each school in detail annually, report on the work of each teacher and on all the needs of the schools, take part where necessary in the Annual Examination, and be generally responsible for the efficiency of the schools. The Government Inspecting Officer would not inspect in such great detail, nor would it ordinarily be necessary for him to visit each school more than once in 2 or 3 years. He would not be concerned with the work of individual teacher, nor would he take part in the annual examination, although he would by inspection or examination satisfy himself that reasonable strictness had been exercised in the matter of promotions. He would in fact report generally on the work of the schools in his charge.

The object of such inspection is to enable the Educational Department to satisfy itself that the education given fulfils the requirements, and that adequate results are being obtained from the expenditure of the Board.

Inspecting Officers would report to the Department, and would not issue any direct orders to school masters.

Great care would have to be taken to avoid overlapping, but this should not be impossible.

It is also necessary to look at the question of supervision and inspection from the point of view of economy, and to avoid additional expenditure it is suggested that the number of supervisors should be one-half to two-thirds of the present number of Assistant Deputy Educational Inspectors, while the Government Inspecting Officers should not exceed one-quarter to one-third of the present staff.

Primary teachers might be employed largely as supervisors on a special scale of pay, say, Rs. 45-3-75-5-125, with an immediate increase of Rs. 5 to Rs. 9 on first appointment. For the Government Inspecting Staff, men of higher academic qualifications, preferably trained graduates, would be necessary.

It would not be wise unduly to reduce the supervising and inspecting staff at the beginning, and while some witnesses have described the present inspecting staff as excessive, others have urged that it is far from adequate.

It may be pointed out that the proportion which the cost of inspection bears to the total cost of primary education in Bombay Presidency is less than in any other Province.

8. Status of Primary Teachers.

(*i*) As pointed out previously, the rules governing the relations between Government and local bodies in respect of primary education are based on the fact that there is one common cadre of teachers, who have all the privileges of Government servants, including fixed scales of pay.

We propose that in future the teachers should be more definitely the servants of the local education authorities, and not transferable from one to another except by mutual agreement. The question arises whether the local authorities should be allowed to fix the pay of teachers or whether the present system by which the pay is fixed by Government should continue.

It is obviously necessary that primary teachers should be paid at an adequate rate and that they should have reasonable security of tenure. On the other hand the present system is expensive and is resented by the local bodies, some of whom ask why they should be compelled to pay the Government rates when they can get satisfactory teachers for less.

It may be useful to consider what has happened in England. Until recently, local authorities made their own arrangements as regards teachers and the pay was fixed mainly in accordance with the law of supply and demand. The result was a general complaint that the teachers were underpaid.

After a good deal of agitation on the part of the teachers, a Standing Joint Committee, presided over by Lord Burnham, was created by Government, on which both the local education authorities and the teachers were represented. This Committee drew up a minimum scale of pay and three other standard scales.

The choice of a scale in any area is a matter for agreement between the local education authority and the teachers, subject to the approval of the Standing Joint Committee.

It is generally felt that a common scale of pay for the whole Presidency is not suitable owing to variations in the cost of living.

We suggest that a similar procedure to that obtaining in England be adopted, viz., *that Government should fix minimum rates of pay, but that local education authorities should be allowed to fix their own scales subject to these minima. To prevent extravagance maximum rates should also be fixed. These conditions would apply to new teachers only, as existing teachers must be given the pay which has already been sanctioned for them.*

It may be pointed out that the development of primary education depends very largely on the pay which is given to teachers, as this is responsible for over 80 per cent. of the expenditure. While it is essential that primary teachers should be paid at a reasonable rate, we realise that we cannot afford to be too generous, without either limiting the number of schools or levying unduly heavy taxation.

(*ii*) The next point to be considered is whether primary teachers recruited in future should be pensionable. There are objections to pensions, which need not be enumerated, and there is a strong feeling that a Provident Fund is preferable. The difficulty is that the maintenance of such a fund for primary teachers would involve an enormous amount of account work, but on the other hand there would be a saving in the clerical work required for keeping records of service.

We recommend that a Provident Fund be instituted for newly recruited primary teachers, if investigation shows that it is feasible.

(*iii*) The third question which has to be considered is security of tenure. At present primary teachers have the same security of tenure as other Government servants. They cannot be dismissed without a full enquiry, at which every opportunity is given to them of defending themselves. Existing teachers will naturally retain their rights in this respect.

We recommend that no primary teacher permanently employed by a local education authority should be dismissed without a full enquiry, held in accordance with the rules laid down by Government, by the District Education Board or School Board (in the case of Municipalities), provided also that an order of dismissal by such Board shall be confirmed by the District Council or Municipality, as the case may be.

Teachers already in employment should have the right of appeal to Government.

We suggest also that a similar procedure should be followed in cases in which it is proposed permanently to reduce a teacher's pay.

9. Financial Control of Government.

We consider that it is necessary for Government to exercise general control over the expenditure of the local education authorities to ensure that it has been incurred in accordance with the rules and that there has been no undue extravagance.

As pointed out previously, the budget will have to be submitted in about September to enable Government to make the necessary provision in the

Provincial budget for grants. It will be scrutinised to see that adequate provision for primary education has been made and that it conforms to the general rules of the Educational Department and to accounts principles, *e.g.*, that the recurring receipts are sufficient to meet the recurring expenditure, that the minimum balance has been maintained, and so on. The accounts of the local education authority will have to be audited every year by an officer of Government.

The sanction of Government will presumably be necessary for the levying of additional local taxation. It may be found necessary to allow the local education authorities to borrow money for non-recurring expenditure on buildings.

In the case of Municipalities whose schools are managed by the District Education Board, their contribution towards the cost of their schools will have to be determined before the beginning of the financial year, and it is suggested that this should be based on the average attendance in the previous year and the estimated average cost per pupil for the whole district.

In this way the necessity of maintaining separate accounts for each Municipality will be avoided.

10. Taluka Boards, Panchayats, and School Committees.

(*a*) Taluka Boards.

The Taluka Local Boards have at present the power of determining the places at which new schools shall be opened and of deciding upon the transfer or abolition of existing Local Board Schools.

We have definitely made the district the unit of administration and proposed that the management of primary schools should be entrusted to a District Education Board on which each taluka will be represented.

It is not easy to fit the Taluka Boards into the scheme of administration.

We suggest that Taluka Boards should exercise such powers as may be delegated to them by the District Education Board.

(*b*) Panchayats.

Under the Panchayat Act one of the duties of the Panchayat is to supervise the village school.

We understand that rules are being framed under the Act, defining the powers to be entrusted to the Panchayat, and that these include the fixing at the beginning of each school year the school hours and the dates of the vacations and holidays, the carrying out of current repairs to the school building, and other duties which may be classed under the head of general supervision. We consider that the Panchayats should assist in procuring a suitable house for the school, and should be encouraged to build one with the assistance of a grant from the District Education Board. The Panchayats should not be allowed to interfere with the internal management and discipline of the school or to issue orders except in accordance with the powers granted to them.

It is anticipated that the grant of specific powers to the Panchayats will result in the members taking far more interest in the success of the school.

The duties of Panchayats in connection with attendance will be discussed in paragraph 12.

(*c*) School Committees.

In villages in which there is no Panchayat, we recommend that a School Committee should be appointed by the District Education Board.

Their duties would be similar to those proposed for Panchayats.

11. Machinery for enforcing Compulsion.

(*a*) School Committees.

The enforcement of compulsion should be left to the School Board or a Sub-Committee thereof in the case of municipal schools and to the Panchayat, or School Committee, if there is no Panchayat, in rural areas.

These Committees will be responsible for organising a census of all children when the Act is first applied in an area and for preparing a list annually of the children who will become liable for compulsory attendance in the next school year. They should also be responsible for seeing that parents do not fail to send their children to school, and lists of absentees should be sent to them by the Head Master of the schools in the area every week.

(*b*) Attendance Officers.

Where necessary a paid officer may be employed temporarily or permanently to carry out duties in connection with the enforcement of compulsion.

Such attendance officers will perhaps be necessary in City Municipalities, and District Educational Boards may have to employ a certain number, but we consider that the enforcement of attendance should as far as possible be entrusted to the representatives of the people themselves, *i.e.* to School Committees and Panchayats. The duties of the attendance officers of the District Educational Boards, if appointed, will consist mainly in the supervision and checking of attendance. In the beginning this work may, perhaps, be entrusted to the ordinary supervising staff.

(*c*) Infliction of Penalties.

While the last thing we desire is to render compulsory education merely nominal by watering down the rules and regulations for enforcing it, we feel strongly that the willing co-operation of the people is necessary for real success. It is no doubt possible to coerce parents into sending their children to school, but compulsory education will fail in its purpose if the people come to look upon it as an oppressive measure, to be evaded if possible, and endured as an injustice, if it cannot be evaded.

We believe that more can be effected by moral suasion than by coercive measures in the beginning. For this reason, while we agree that in the last resource penalties must be inflicted on recalcitrant parents, we consider that every effort should be made to convince them of the value of education and to induce them to send their children to school voluntarily. We have referred previously to the need of propaganda, and we would again emphasise its importance.

We are not in favour of the infliction of penalties being entrusted to Magistrates, except perhaps in municipal areas, but suggest that a Committee of three persons should be constituted in each village, to whom all cases should be reported. These Committees should comprise the Chairman of the Panchayat or School Committee, as the case may be, and two members of the Panchayat or School Committee, elected by these bodies and holding office for 6 months.

The maximum penalty should be a fine of Rs. 5, but for the first offence Re. 1 might be fixed.

It has been suggested that the fines should be credited in each village to a fund to be used to purchase books and slates for poor children.

12. Legislation.

We have put forward a detailed programme for the introduction of compulsory education, and suggested changes in the control and management of primary education.

Legislation in respect of primary education is at present to be found in the Bombay District Municipal Act, 1901, the Bombay Local Boards Act, 1884,

and the Bombay Primary Education (District Municipalities) Act, 1918. (Patel Act.)

We propose that a separate and comprehensive Primary Education Act should be framed, dealing with the whole question of the management of primary education, and containing in addition, the provisions necessary for the introduction of compulsory education.

The general relations between Government and local bodies in respect of primary education which are at present laid down in the rules framed under the Municipal and Local Boards Acts might well find a place in a Primary Education Act.

CHAPTER VIII.

GENERAL QUESTIONS.

The fifth of the terms of reference is as follows:—

To consider and report on any other matters germane to this question (introduction of free and compulsory education).

A number of points on which evidence has been received, which bear on the general question of compulsory education have, therefore, been considered.

1. Curriculum.

We consider that the aim of primary education should be to equip each pupil with a command of reading, writing and arithmetic which will not be lost within a few years of his leaving school. We realise of course that education means much more than this, but we feel that in the beginning the acquisition of what have been called the instruments of knowledge is of fundamental importance.

Although the present curriculum in primary schools has met with a good deal of criticism, we doubt whether the actual subjects taught in the first five years of the course can be modified to any great extent. Reading, writing, and arithmetic are the bases of elementary education and these subjects, with a little drawing, geography and history, are what are now taught in the primary standards.

We are of opinion, however, that the teaching of these subjects should be brought more into touch with the pupil's environment, that questions in arithmetic should deal with things which he has seen and understands, that geography should be taught with reference to the village, and so on. We do not, however, consider that direct vocational training is feasible in the primary course, *i.e.* up to Standard IV.

We are in favour of moral instruction being given in primary schools, chiefly by means of stories and lessons, but we are not prepared to express any opinion on the question of religious instruction, which is of far too complex a character.

We recommend that the curriculum should be modified and simplified where necessary so as to bring it into closer relation with the pupil's environment. The vernacular Readers should be revised in respect of language and matter as far as may be found necessary. Sufficient provision should be made for moral instruction by means of stories and lessons in the Readers.

2. Continuation of Education.

We have pointed out that all that can be done in the 5 years in the primary school is to equip the pupils with the power of reading and writing fluently and with some knowledge of the principles and practice of arithmetic, and we feel the urgent need of providing facilities for them to continue their education after

they have left school, especially in the villages. A number, it is hoped, will remain at school after completing the compulsory course, and for these we suggest the creation of schools with a vocational bias, *e.g.*, with special instruction in nature study and gardening as a preliminary to agriculture. Such schools may be classed as pre-vocational. The experiment of attaching a teacher of English to selected Local Board schools might also be considerably extended. Night schools and classes should be encouraged.

For the others, we consider that the production of interesting and instructive books in the vernacular, written in simple language, and published at very low rates is of the greatest importance. The pupils should be encouraged, to read such books while they are at school, so as to acquire the habit of reading. Much also might be done by the publication of newspapers and magazines of a healthy tone dealing with village life and current events, in a not too obviously instructive manner. Public lectures and even the cinematograph may also play a part in broadening the outlook of the village people and giving them a wider interest in life.

We recommend that pre-vocational schools and middle schools in which English is taught should be provided in rural areas, that night schools should be encouraged, and that steps be taken to provide an adequate supply of interesting and instructive vernacular literature, written in simple language and published at low rates.

3. Recruitment of Teachers.

A considerable number of witnesses have suggested that primary education would be more successful in rural areas if there were more teachers of the same caste as the pupils, or of a similar caste. While the Brahman, who belongs to a caste which is by heredity intellectual, naturally takes to the teaching profession, it is possible that he is somewhat aloof from the ordinary village interests, and inclined to deal with the abstract rather than the concrete in his teaching.

Stress has been laid on the importance of basing village education on the village and the activities of village life.

It has also been alleged that in some cases the Brahman does not encourage the agricultural classes to attend school. There are also arguments in favour of the school master being a local man, a villager himself, although there is the objection that he is apt to take sides in local quarrels.

We are not prepared to enter into any controversy on the subject of the caste of primary teachers, but we are disposed to recommend that the recruitment of teachers from the agricultural and allied classes and from the backward classes should be encouraged.

We are also of opinion that teachers should be recruited as far as possible locally, i.e. *for schools in or near their own towns or villages.*

4. Pay of Teachers.

Teachers in Government, Local Board, and Municipal primary schools have all the rights and privileges of Government servants, and are on fixed scales of pay.

These scales are as follows :—

Qualified but untrained assistants	...	Rs. 25
Qualified but untrained head-masters	...	„ 30
I Year trained teachers	...	„ 15-30
Selection grade	...	„ 40
II Year trained teachers	...	„ 20-40
Selection grade	...	„ 55
III Year trained teachers	...	„ 25-60
Selection grade	...	„ 75

10 per cent. of the cadre of trained teachers are eligible for selection grades. Untrained teachers of over 10 years' approved service may be granted I Year Certificates.

War allowance is given in addition to the above pay of trained teachers, for whom, however, minimum rates of pay, inclusive of allowances have recently been fixed as follows :—

I Year Rs. 30, II Year Rs. 35, III Year Rs. 40.

A Committee of the Legislative Council which sat in December, 1920, recommended the following scales :—

Qualified but untrained assistants	...	Rs.	25-½-30
Qualified but untrained head-masters	...	„	30-½-35
I Year	...	„	30-1-50
Selection grade	...	„	55
II Year	...	„	35-3/2-65
Selection grade	...	„	75
III Year	...	„	40-2-80
Selection grade	...	„	100

Opinions as to the adequacy of the present scales of pay vary greatly. Some witnesses, especially those from Sind, have advocated considerable increases. Others have suggested that the scales are unnecessarily high, and above what may be termed the "market rate".

The question is a very difficult one. On the one hand the labourer is worthy of his hire, and it would be a great mistake to entrust primary schools to 'sweated labour.' On the other hand the higher the pay of the teacher, the less rapid can be the expansion of primary education. There is definite evidence that in many districts the supply of candidates for teachers' posts is considerably in excess of the demand, in spite of the fact that a daily labourer can earn as much as a school master.

Teachers have always been poorly paid all over the world, possibly because the layman looks upon his life as one of comparative ease and contentment.

Very substantial increases have been given to primary teachers in Bombay during the last 10 years or so, especially to the untrained teachers, and in the initial pay of trained teachers. Those who formerly received Rs. 9 now get Rs. 25, and although the scales for trained teachers have not been proportionately raised it must be remembered that it was not until 1919 that these scales were definitely worked up to and teachers were granted their increments as they became due.

On the whole the minima now fixed appear to us to be adequate.

It has been suggested that part of the pay of teachers should be "by results", *i.e.*, should depend on the results of the examination or inspection of their schools or classes. There is something to be said in favour of such a course, but it is difficult to assess the work of a teacher on a mathematical basis, nor can a number of inspecting officers be expected to maintain a sufficiently uniform standard.

As regards increments, there is the danger that teachers may become lazy and indifferent if they receive their increments more or less as a matter of course, and it appears to be desirable to withhold increments from teachers whose work is not definitely satisfactory.

It is also necessary to discriminate between the pay of trained teachers and assistants, and while the scale proposed by the Committee of the Legislative Council is suitable for head masters, there appears to be no reason why assistant masters should go much beyond the present maxima, *viz.*, Rs. 30, Rs. 40 and Rs. 60 for I, II, and III year teachers respectively.

Some criticism of selection grades has been offered, and it might be better to attach somewhat higher rates of pay or special allowances to large and important schools.

At present there is nothing in the rules to prevent the head master of a small school or even an assistant master being given a selection grade.

The wider recruitment of primary teachers as inspecting and supervising officers would naturally improve the prospects of the better men, and would at the same time be economical.

An important question which must be considered is whether in future it will be possible to fix lower rates of pay for primary teachers. At present teachers are liable to transfer to any part of the district and in some cases to other districts. If the local authorities recruit their teachers locally, *i.e.,* from the villages in or near which the schools are situated, it may be found that they will be satisfied with less pay. It is cheaper and more convenient to live at home than in a strange village. The appointment of more teachers of the agricultural and similar classes may also tend to bring down salaries, as these men will be accustomed to village life, and are less likely to adopt a higher standard of living than their neighbours.

The localising of teachers is of special importance in Sind, where custom makes it difficult for a wife to accompany her husband when posted away from their own village.

On the whole the evidence before us tends to show that in many localities it will be possible to fix lower minimum rates of pay in future.

We may summarise our proposals as follows:—

We consider that the scales of pay proposed by the Committee of the Legislative Council in 1920 are not unsuitable provided that lower maxima and possibly smaller increments are fixed for assistant teachers, and that teachers are not granted their increments unless their work is definitely satisfactory. Local allowances may be sanctioned for areas in which the cost of living is specially high.

We are inclined to think that in future it will be possible to fix lower minimum rates of pay.

We suggest that the question of substituting a few more highly paid appointments in each area for the selection grades and the feasibility of recruiting the inspecting and supervising staff to a greater extent from primary teachers be considered.

5. Training of Teachers.

The importance of employing an adequate proportion of trained teachers cannot be overrated, but at the outset we are met with the question of cost. Not only has the cost of training to be considered, but also the much higher salaries paid to trained teachers. Consequently provision can be made only for the minimum proportion of trained teachers consistent with efficiency.

We do not propose to deal with the training of women teachers, a problem full of difficulties, except to suggest that the training of women for employment in rural schools should be encouraged in every way. The proportion of trained masters in different divisions of the Presidency varies a great deal, but on the average 47 per cent. are trained.

There are 2,949, 3,628, and 3,024 teachers holding the III, II and I Year Certificates respectively, while 12,229 are untrained.

Out of 6½ lakhs of boys in primary schools on 31-3-1921, only 61,000 or 9 per cent. were in classes above Standard IV.

Untrained and I year teachers should be competent to teach the lower standards and we, therefore, consider that the number of II and III year teachers should be kept as low as possible. On the other hand, efforts should be concentrated on turning out a large number of I year masters.

It is also a question whether practical training on the lines of the normal classes which were held formerly should not be made use of. A candidate for employment might be posted for six months in a large school under a competent Head Master and given a stipend, if necessary. Part of his time would be devoted to watching good teachers at work and part to teaching under supervision. Some academic and theoretical instruction might also be given. Such a scheme is to some extent in the nature of an apprenticeship system. Until a candidate has successfully completed his six months' course, he should not be eligible for the pay of a qualified teacher. There is at present no dearth of trained III year teachers capable of supervising such classes.

It must be remembered that the greater part of the time spent in the Training Colleges is devoted to academic studies, and that a candidate who has passed the V. F. Examination has or ought to have a sufficient knowledge of the ordinary school subjects to teach the lower classes. What he needs most is guidance and practice in teaching.

An interesting suggestion has been made that a Training College should be started in some rural area and staffed with men with rural experience, so that teachers for village schools may be trained in a rural atmosphere.

We recommend that the number of teachers who are given two or three years' training should be kept as low as possible, and that training institutions should concentrate their efforts on turning out I year trained teachers, capable of teaching any class up to Standard IV. We suggest also that the question of demanding six months' apprenticeship or attendance at a normal class before a teacher is classed as 'qualified' be considered.

We also suggest that enquiries be made to determine whether the training given in existing training institutions is altogether suitable for teachers in village schools.

6. The Shift System.

The original idea underlying the "Shift" system is the better utilisation of school buildings.

Ordinarily a building is occupied by one set of boys only each day. The question is whether more than one set can be accommodated by modifications of the school hours. In many parts of the Presidency a school could be open from 7-30 a.m. to 5-30 p.m. for the greater part of the year, *i.e.*, for ten hours and it would be theoretically possible to have two separate sets of teachers and pupils, thus doubling the accommodation provided by one building. There is, however, no saving in staff.

A further modification has been suggested for primary schools, *viz.*, a reduction in the number of school hours. At present boys attend for 5 or 6 hours, and it is proposed to reduce these to three, at any rate in the lowest classes. Half the pupils would meet for 3 hours in the morning and the other half for 3 hours in the afternoon. No satisfactory name has been suggested for such a system, which for want of a better one we will continue to call the "Shift" system.

Such a scheme would allow nearly twice as many children to be taught with the same staff and building.

The "Shift" system, with or without reduced hours, appears to be practicable in the lower classes of large Municipal schools and probably in large rural schools, and it is said to have been tried successfully in a few cases.

Several witnesses have expressed a doubt whether a Shift system with reduced hours is feasible in small village schools, and whether one teacher is capable of 6 hours' intensive teaching daily.

If the hours are reduced from 5 to 3, it follows that a boy must learn in 3 hours what he formerly learnt in five. On the other hand, it is urged, and with reason, that in the small school with one teacher for 3 or 4 classes, the actual amount of teaching which each class gets is small and there is not much object in keeping a child in school when the teacher is attending to other classes.

Perhaps the most unsatisfactory feature of the present system of primary education is the "one man school", and it cannot be denied that it results in very serious stagnation in the lower classes and that the majority of the pupils remain at least 2 years in the Infant Class and do not as a rule get beyond Standard II or Standard III—the average period that a boy stays at a primary school has been calculated to be a little over 4 years.

It is generally conceded that a child must have completed Standard IV if he is to retain the knowledge he has acquired, and he cannot therefore afford to spend 2 years in any class.

The question to be decided is whether the so-called Shift system and reduced hours are likely to bring about an improvement or a deterioration in the matter of stagnation. Although it may appear paradoxical to suggest that reduced attendance at school will result in more efficient education, we are inclined to think that the system is worth a trial. It must be remembered that children in the Infant Class require far more attention from the teacher than others. They can neither read nor write, and it is not easy to provide them with tasks which they can perform without assistance. Once a pupil has learnt to read and write, he can be allowed to work by himself.

It is essential to the success of the 'Shift system' that one shift should be devoted to the Infants only, or with not more than one other small class, preferably the highest. If the teacher devotes $2\frac{3}{4}$ or 3 hours entirely to the Infant Class more or less continuously, it is probable that considerably better progress will be made than at present, when these small children have to sit about for long hours with little or nothing to do. It is also important that children should be admitted to the Infant Class in the beginning of the school year, except in the case of the transfer of parents or guardians, so that all may be on the same level, and it is desirable that children below the compulsory limit of ages should not be admitted, as they are not likely to be able to keep up with the older children, and once the class has to be divided into 2 or 3 sections, the whole scheme will fail.

We consider also that where more than three standards are taught in a school in addition to the Infant Class, there should be at least two teachers.

It will then be possible for the higher classes to attend school for longer hours.

There are weaknesses in the 'Shift' system, which cannot be ignored.

The capacity of a teacher to work for 6 hours a day at much higher pressure than he does at present has been denied by several witnesses. It has also been pointed out that similar schemes have been tried in the past and failed owing to the opposition of parents, who considered that they were entitled to a full day's teaching for their children. Further there may be domestic difficulties in the way of children belonging to the same family attending school at different hours, or of the infants having to walk to school unaccompanied.

Another objection which has been raised to the reduced hours is the fear that the pupils after completing Standard IV will not be sufficiently advanced to join an Anglo-Vernacular school. It is not proposed materially to reduce the curriculum, and time alone can show how far children are able satisfactorily to complete the primary course in five years, if school hours are reduced in the lower classes.

On the whole we are prepared to recommend that local authorities who desire to introduce the 'Shift' system, by which half the pupils in the lower classes attend school in the morning and the other half in the afternoon, should be allowed to do so, but we consider that the experiment should be watched carefully.

7. Aided Schools.

At present about 140,000 pupils are attending aided primary schools, but owing to the increased cost of living and the small fees which are paid in such

schools, and in view of the probable effect of making primary education free, it is not anticipated that there will be any great increase in the number of aided schools unless the grants are materially increased, and for this reason the cost of our programme for compulsory education has been calculated on the assumption that the additional pupils will attend Government, Municipal, and Local Board schools.

At the same time it is realised that aided schools are usually cheaper than schools under public management and that encouragement should be given to them if they are reasonably efficient. We understand that there are in many 'school-less' villages qualified men who are prepared to open schools, if they are assured of adequate remuneration. We recommend that such enterprises be encouraged, at any rate, as a temporary measure. It will be necessary, however, to modify the present system of awarding grants on the expenditure and to substitute one based partly on attendance and partly on examination results. A Local Board school of 25 pupils will cost approximately Rs. 500 annually. It therefore appears to be not unreasonable to award a capitation grant to an aided school of the same size up to Rs. 10 per pupil. We would limit this concession, however, to aided schools open to all classes of pupils, which could be registered for the purposes of a Compulsory Education Act in selected villages in which there is no Local Board School. The experiment would have to be carefully watched, as it is obviously undesirable to encourage what are called 'venture' schools, *i.e.*, schools opened solely with a view to making money, frequently by wholly incompetent persons.

We recommend that private enterprise in opening schools be encouraged especially in rural areas not already provided with schools, provided that due care is taken that efficient schools only are awarded grants.

In conclusion we desire to place on record our warm appreciation of the valuable services rendered to the Committee by the Secretary, Mr. M. Hesketh, I.E.S.

*N. G. CHANDAVARKAR, Chairman.

†P. J. MEAD,
G. K. CHITALE,
‡P. R. CHIKODI,
D. D. GHOLAP,
†B. G. PAHALAJANI,
C. M. GANDHI,
†GHULAM HUSSAIN KASSIM,
D. A. VICHARE,
†F. B. P. LORY,
} Members.

M. HESKETH,
Secretary.

15th May 1922.

*I have signed this Report *pro forma*, as it will come on for discussion in the Legislative Council, and my capacity as President of that Council requires that I should take no sides in a controversy and should not commit myself to any view in the Report. It was upon that definite understanding that I was appointed Chairman of the Committee by H. E. the Governor in Council.

N.G.C.

† Have sent in notes of dissent on some points.

‡ Is sending in a note of dissent on the main points.

These will be printed in a supplement.

APPENDIX A.

List of Witnesses who gave oral evidence.

Archbishop of Damaun, Bombay.
Mr. S. Bakarali, Poona.
„ A. J. Bangi.
„ G. C. Bhate, M.L.C., Roha.
„ C. E. Chatfield, C.I.E., I.C.S., Ahmedabad.
„ B. K. Dalvi, B.A., LL.B., Belgaum.
„ G. M. Desai, Nadiad.
„ P. K. Desai, Ahmedabad.
„ R. S. Dikshit, B.A., Poona.
„ R. D. Gaonkar, Assistant Deputy Educational Inspector, Kanara.
„ V. L. Gatne, B.A., Poona.
„ T. S. Girme, Baramati.
„ I. M. Hatrote, Nipani.
„ B. V. Jadhav, M.L.C., Satara.
„ D. S. Jadhav, Bijapur.
„ N. T. Jadhav, Bombay.
Rao Saheb Papanna Jalliah, Belgaum.
Mr. K. G. Joshi, B.A., I.E.S., Poona.
„ S. V. Joshi, Satara.
„ V. M. Joshi, M.A., Poona.
Khan Bahadur S. S. Kadri, I.S.O., F.B.U., B.A.
Rao Bahadur R. R. Kale, LL.B., M.L.C. Satara.
Mr. G. G. Kamble, Poona.
Prof. K. R. Kanitkar, M.A., B.Sc., Poona.
Rao Bahadur Thakorram Kapilram, B.A. LL.B., Surat.
Mr. V. R. Kothari, B.A., Poona.
„ T. A. Kulkani, Bombay.
„ B. P. Kunte, Alibag.
Miss J. Latham, Ahmednagar.
Mr, A. M. Latthe, B.A., LL.B., M.L.A.
„ E. G. L. MacGregor, I.C.S., Belgaum.
„ Dada Jinnappa Madwanna Dudhgaon.
Rao Bahadur A. U. Malji, Broach.
Mr. S. S. Mangsoli Athni.
Dr. H. H. Mann, Director of Agriculture.
Mr. M. B. Marathe, B.A., LL.B., Belgaum.
Mr. J. R. Martin, I.C.S.
„ A. M. Masani, M.A., B.Sc., Baroda.
„ A. Master, I.C.S., Dharwar.
„ R. G. Mehta, Surat.
Divan Bahadur S. V. Mensinkai, Dharwar.
Rao Saheb M. L. Naidu, Belgaum.
Rao Bahadur R. G. Naik, M.B.E., Belgaum
Mr. F. T. Nalvadi, Dharwar.
Rao Bahadur R. M. Nilkanth, B.A., LL.B., M.L.C., Ahmedabad.
Mr. Pandurang Narayan Adhav, M.L.C., Satara.
„ N. K. Patel, B.A., LL.B., Nasik.
„ R. B. Patel, F.R.A.C., M.R.A.S.E., Baroda.
„ R. D. Patel, Rajkot.
Sirdar J. V. Pathakaji, Surat.
Mr. S. V. Pathan, B.A., LL.B., Dhulia.
„ B. L. Patil, B.A., LL.B., Dharwar.
„ H. K. Patwardhan, F.T.C., BA., LL.B., Ahmednagar.
„ R. N. Perur, B. A., Dharwar.
„ R. G. Pradhan, B.A., LL.B., M.R.A.S., Nasik.
„ F. G. Pratt, I.C.S.
„ M. J. Ravan, Nipani.
„ R. P. Sabnis, B.A., Poona.
„ M. R Sakhare, M.A., Belgaum.
„ D. V. Saundankar, Dhulia.
„ D. Y. Sawant, Belgaum.
„ L. J. Sedgwick, I.C.S.
„ D. L. Shinde, Bahal (East Khandesh).
„ V. R. Shinde, Poona.
„ K. A. Sirdeshpande, Manoli.
„ R. S. Surve, B.A., Poona.
„ H. P. Thackersey, Bombay.
„ A. V. Thakkar, Poona.
„ D. R. Vadekar, Rahuri.
„ K. S. Vakil, B.A., Poona.
„ S. G. Vaze, Poona.

SIND.

Mr. R. D. Advani, B.A., Karachi.

„ Tyebali Alibhoy Karimji Alavi, Karachi.

„ L. G. Bhojwani, B.A., Karachi.

The Hon'ble Mr. G. M. Bhurgri, Barrister-at-law, Hyderabad.

Mr. E. J. Bolus, I.C.S., Nawabshah.

„ S. D. Contractor, B.A., Karachi.

„ W. Grieve, M.A., I.E.S., Karachi.

„ S. Abdul Haq, Jacobabad.

„ S. Wali Mohamed Hassanally, M.L.A.

Mr. G. N. Kazi, Hyderabad.

„ R. M. Kewalramani, Karachi.

Khansaheb Dilmuradkhan Khoso, Jacobabad.

Mr. D. P. Kotwal, Karachi.

„ Jamshed N. R. Mehta, Karachi.

„ Nainimal Totaldas Karachi.

Mr. V. G. Pradhan, M.A., L.T., Karachi.

Prof. S. C. Shahani, M.L.A., Karachi.

APPENDIX B.

Question I.—Are you in favour of the introduction of a system of compulsory primary education, *i.e.*, will you send your children, girls as well as boys, between the ages of 6 and 11, to school if there is one in your village or within a mile or two of your village ?

Question II.—Do you think that the people of the class to which you belong would support a compulsory system of primary education, and send their children to school if there were one near ?

Question III.—If a compulsory system of primary education is introduced, do you understand that if any child absents himself from school without reason his parent or guardian will be liable to be fined ? And do you accept this system and do you think that the people of your class will approve of it ?

No.	Caste.	No. of Witnesses.	Question I.		Question II.		Question III.		Remarks.
			For	Against.	For.	Against.	For.	Against.	
	Deccan.								
1	Bhangi ...	4	4	...	4	...	3	1	
2	Bhil ...	6	5	1	5	1	3	3	
3	Bohara ...	1	1	...	1	...	1	...	
4	Chambhar ...	70	38	32	38	32	38	32	
5	Dhangar ...	1	1	...	1	...	1	...	
6	Kaikadi ...	2	2	...	2	...	2	...	
7	Koli ...	4	4	...	4	...	2	2	
8	Mahar ...	167	97	70	97	70	96	71	
9	Mang ...	78	55	23	55	23	55	23	
10	Maratha ...	3	3	...	3	...	3	...	
11	Paradhi ...	1	1	...	1	...	1	...	
12	Ramoshi ...	2	2	...	2	...	2	...	
13	Vanjari ...	2	2	...	2	..	1	1	
14	Vaswas ...	5	*5	...	5	.....	...	5	*Except at the time of sowing.
		346	219	127	219	127	207	139	
	Konkan.								
1	Bari ...	1	...	1	...	1	...	1	
2	Bhandari ...	3	2	1	2	1	2	1	
3	Chambhar ...	32	†24	8	24	8	21	11	†4 say for boys only.
4	Deoli Maratha ...	3	1	2	1	2	1	2	
5	Dharkoli ...	1	1	...	1	...	1	...	
6	Dhorka Jodi ...	1	1	...	1	...	1	...	
7	Gabit ...	3	2	1	2	1	2	1	
8	Kathodi ...	1	1	...	1	...	1	...	
9	Katkari ...	4	†2	2	2	2	2	2	† Do.
10	Koli ...	4	2	2	2	2	2	2	
11	Konkane ...	6	†6	...	6	...	6	...	† Do.
12	Kunabi ...	23	20	3	20	3	15	8	
13	Lohar ...	2	†2	...	2	...	2	...	† Do.
14	Mahadeo Koli ...	1	1	...	1	...	1	...	

No.	Caste.	No. of Witnesses.	Question I.		Question II.		Question III.		Remarks.
			For.	Against.	For.	Against.	For.	Against.	
	Konkan—contd.								
15	Mahar ...	68	*51	17	61	17	47	21	*6 say for boys and also free and book and slates supplied free.
16	Mangale ...	2	...	2	...	2	...	2	
17	Maratha ...	5	3	2	3	2	3	2	
18	Parit ...	2	1	1	1	1	1	1	
19	Sutar ...	3	...	3	...	3	...	3	
20	Teli ...	1	1	...	1	...	1	...	
21	Thakur ...	4	3	1	3	1	3	1	
22	Vadar ...	3	3	...	3	...	3	...	
23	Warali ...	12	†10	2	10	2	10	2	†For boys only.
24	Others ...	10	†2	8	2	8	2	8	† Do.
		195	139	56	139	56	127	68	
	Karnatak.								
1	Ager ...	1	1	...	1	...	1	...	
2	Ambigar ...	1	1	...	1	...	1	...	
3	Ambir ...	2	1	1	1	1	1	1	
4	Chamar ...	6	5	1	5	1	2	4	
5	Chambhar ...	1	1	...	1	...	1	...	
6	Dhed ...	1	1	...	1	...	1	...	
7	Gabit ...	3	3	...	3	...	1	2	
8	Gam Vakkal ...	3	‡2	1	2	1	2	1	‡ For boys only
9	Halaki Vakkal ...	3	‡2	1	2	1	2	1	‡ Do.
10	Halepaik ...	2	1	1	1	1	1	1	
11	Harankant ...	1	1	...	1	...	1	...	
12	Harikantar ...	2	1	1	1	1	...	2	
13	Holer ...	4	4	...	4	...	4	...	
14	Hulsar ...	3	3	...	3	...	2	1	
15	Hulsawar ...	1	1	...	1	...	1	...	
16	Kere Vakkal ...	2	‡1	1	1	1	1	1	‡ Do.
17	Kharvi ...	6	‡4	2	4	2	3	3	‡ Do.
18	Lamani ...	2	2	...	2	...	2	...	
19	Mahar ...	2	§1	1	1	1	...	2	§ Books and slates should be supplied free.
20	Metri ...	2	...	2	...	2	...	2	
21	Moger ...	3	3	...	3	...	3	...	
22	Mochi ...	3	¶3	...	3	...	2	1	¶ For boys only.
23	Namdhari ...	4	4	...	4	...	3	1	
24	Sunnagar ...	1	...	1	...	1	...	1	
25	Vaddar ...	2	2	...	2	...	2	...	
		61	48	13	47	14	35	26	

No.	Caste.	No. of Witnesses.	Question I.		Question II.		Question III.		Remarks.
			For.	Against.	For.	Against.	For.	Against.	
	Gujarat.								
1	Baria ...	2	2	...	2	...	2	...	
2	Barudia ...	1	...	1	...	1	...	1	
3	Bhangi ...	29	4	25	4	25	3	26	
4	Bhandaria ...	1	1	...	1	...	1	...	
5	Bhil ...	3	2	1	2	1	...	3	
6	Chamdia ...	5	...	5	...	5	...	5	
7	Chamar ...	5	...	5	...	5	...	5	
8	Chodra ...	2	...	2	...	2	...	2	
9	Dharala ...	54	4	50	4	50	...	54	
10	Dhed ...	48	...	48	...	48	...	48	
11	Dhodia ...	1	...	1	...	1	...	1	
12	Dubla ...	2	...	2	...	2	...	2	
13	Fishermen ...	3	3	...	3	...	3	...	
14	Gamat ...	1	...	1	...	1	...	1	
15	Jangato ...	1	1	...	1	...	1	...	
16	Kasuve ...	1	...	1	...	1	...	1	
17	Koli ...	5	3	2	3	2	1	4	
18	Mahomedans ...	59	*6	53	6	53	4	55	* For boys only.
19	Nayak ...	1	...	1	...	1	...	1	
20	Patanwadia ...	2	2	...	2	...	...	2	
21	Rabari ...	1	...	1	...	1	...	1	
22	Sunni Bohara ...	1	...	1	...	1	...	1	
23	Talapda ...	1	1	...	1	...	...	1	
24	Thakurda ...	6	*6	...	6	...	6	...	* Do.
25	Vabru ...	3	1	2	1	2	1	2	
26	Wahgari ...	9	2	7	2	7	...	9	
27	Others ...	10	2	8	2	8	2	8	
		257	40	217	40	217	23	234	
	Sind.								
1	Bhangi ...	1	...	1	...	1	...	1	
2	Bhil ...	2	1	1	1	1	1	1	
3	Criminal Tribes ...	2	2	...	2	...	2	...	
4	Depressed Classes ...	3	1	2	1	2	...	3	
5	Jandhar ...	1	...	1	...	1	...	1	
6	Kabri ...	1	1	...	1	...	...	1	
7	Negro ...	2	...	2	...	2	...	2	
8	Mahomedans ..	64	15	49	15	49	15	49	
9	Others	3	2	6	2	6	2	6	
		84	22	62	22	62	20	64	

Area.	Total No. of Castes.	Total No. of Witnesses.	Question I.		Question II.		Question III.	
			For.	Against.	For.	Against.	For.	Against.
Grand Total.								
Deccan ...	14	346	219	127	219	127	207	139
Konkan ...	24	195	139	56	139	56	127	68
Karnatak ...	25	61	48	13	47	14	35	26
Gujarat ...	27	257	40	217	40	217	23	234
Sind ...	9	84	22	62	22	62	20	64
Total ...	99	943	468	475	467	476	412	531

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Note on the Fuleli Canal Remodelling Project

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A NOTE ON THE FULELI CANAL REMODELLING PROJECT, EXPLAINING THE NECESSITY THEREFOR.

The Fuleli Canal area may conveniently be considered as divided into several well defined sections. There is firstly the section irrigated by the Old Head to the Fuleli, a length of some 16 miles of tortuous channel, connecting the Old Head to the existing Fuleli Canal in its 5th mile. This Old Head to the Fuleli worked well for many years but finally became silted. A new Head was therefore provided at Jamshora, controlled by a New Regulator. A gross area of 131,103 acres is commanded by the old Fuleli Canal, the annual area under cultivation being about 48,400 acres. The whole of this area will in the future be irrigated from the Barrage Canals.

2. The second section of the Fuleli area comprises the lands of Tando Bago, Hyderabad and Dero Mohobat Talukas which are now imperfectly irrigated by the Fuleli Canal but will also in future be irrigated by the Lloyd Barrage Canals. These lands lie on the Left Bank of the Canal and are mostly "lift" under existing conditions. It is therefore only possible for the Fuleli Canal to irrigate a comparatively small acreage out of this large area, much of which is now unoccupied. Transfer of a total area of 447,000 acres from this section of the Fuleli is thus involved.

3. The third section comprises an area of 638,000 acres of occupied lands which will remain on the Fuleli Canal. This area includes parts of Dero Mohobat and Tando Bago and the whole of Badin Talukas.

4. The fourth section is that situated above Alipur Regulator at the 46th mile. Land up to this point is normally too high-lying to be commanded by "flow" in existing conditions. The low-laying lands below the 46th mile down to the tail of the Canal form a fifth section.

5. It is necessary to give certain figures here so that a clear view of the proposals which follow may be obtained.

The gross area commanded by the new Fuleli Canal system, *i.e.*, the whole area as already described, excepting that still irrigated from the Old Canal Head, is 15·72 lakhs acres. The culturable area commanded is 13·47 lakhs acres. The gross area which will be transferred to the Lloyd Barrage Canals will be 4·47 lakhs acres, made up as follows :—

Tando Bago	...	1·51 lakhs acres.
Hyderabad	...	0·14 do.
Dero Mohobat	...	2·82 do.

The following table gives the area settled, the average annual cultivation for the five years ending 1924-25 for the whole system, and similar figures for the area to be transferred to the Lloyd Barrage Canals, the difference between which being the remaining average area of cultivation on the new Fuleli to be retained under the present proposals :—

Item.	Whole new Fuleli system below Jamshora, excluding Jamwah to be transferred to Hasanali.	Area to be transferred to the Lloyd Barrage Canals from the new Fuleli.	Area to be retained on the New Fuleli.
	Acres.	Acres.	Acres.
Area settled (occupied and unoccupied)	938,000	299,937	638,063
Average annual cultivation—			
Kharif—			
Rice	225,645	7,833	217,812
Dry Kharif	60,953	31,293	29,660
Total ...	286,598	39,126	247,472
Rabi—			
Bosi	46,971*	16,014†	30,957
Other Rabi	25,399	8,800‡	16,599‡
Total ...	72,370	24,814	47,556
Total Kharif and Rabi ...	358,968	63,940	295,028

* Irrigated Rabi 16,134.

† Irrigated Rabi 5,300 (estimated).

‡ Approximate.

It will be seen that the average cultivation over the whole area is 3·59 lakhs acres. The average area of cultivation on the portion to be transferred to the Lloyd Barrage Canals is 0·64 lakhs of acres, and the existing average cultivation on the area which will remain on the Fuleli Canal is 2·95 lakhs acres.

6. As has been pointed out in the note printed in the Budget Blue Book the Fuleli tract is considered for purposes of distribution of water as comprising the following three distinct areas :—

(1) from the Head to about mile 30 ;

(2) from mile 30 to mile 46 under the influence of the existing regulator there ; and

(3) the low-lying area below mile 46 to the tail (mile 81/3).

7. In the early part of the season before the river has risen sufficiently high to enable the canal to flow at Full Supply Level, the Alipur Regulator at mile 46 has to be headed up in order to give the high ground immediately above it an early supply. This adversely affects the lower reach. Above the Alipur Regulator the influence of the heading up rapidly diminishes and it has no appreciable effect on levels in the branches at or above mile 30. These conditions are reflected in the figures of

intensities of cultivation in these three zones, as is illustrated by the following figures :—

I. *Canals taking off above 30th mile.*

Name of Branch Canal	Length in miles	Taking off at	Kharif intensity	Rabi intensity	Total per cent.	—
			Per cent.	Per cent.		
Gajawah ...	21	25th mile	36·1	3·8	40·6*	* Corrected figure.
Pandhiawah ...	15	29th mile	40·4	1·8	42·2	
Dhadhro ...	28	20th mile	22	·01	22·0†	† This will be omitted from the scheme as it comes under the Lloyd Barrage and Canals Construction.

NOTE.—Figures showing percentage intensity of cultivation have reference to occupied area.

It will be seen that these canals have a comparatively poor supply both in kharif and rabi.

II. The following are corresponding figures for some of the *Canals taking off above the Alipur Regulator—46th mile.*

Name of Branch Canal	Length in miles	Taking off at	Kharif intensity	Rabi intensity	Total Per cent.
		Mile	Per cent.	Per cent.	
Dokia Wah ...	16	45/4	72·4	1·9	74·3
Jogsi Wah ...	3½	40/3	84·4	0·0	84·4
Chandan Wah ...	2	46	84·5	1·8	86·3

It will be seen that these canals show very high kharif intensity and as a result little rabi is grown.

III. Similar figures for some representative *Canals at the tail* are.:—

Name of Branch Canal	Length in miles	Taking off at	Kharif intensity	Rabi intensity	Total Per cent.
			Per cent.	Per cent.	
Sherwah Large ...	22	Tail ...	47·4	16·4	63·8
Aliwah System ...	28	Tail ...	41·4	8·2	49·6
Ghar Kadhan ...	19	80th mile	50·8	10·0	60·8
Sanhi Guni ...	47	Tail ...	29·5	14·6	44·1

8. It will be clearly seen that the tail area suffers from deficient kharif supply and the zamindars have accordingly to rely on such rabi as they are able to cultivate after the kharif demands of the upper reaches are satisfied.

Analysis of the figures in the three tables given above shows :—

(1) that the high lands above the influence of Alipur Regulator get a comparatively poor supply of water in both kharif and rabi ;

(2) that the Alipur Regulator gives a very abundant kharif supply to the fortunately situated area directly above it ; and

(3) that the tail branches get a very meagre kharif supply but make up for this to some extent by a rabi supply, which supply, however, cannot continue to be relied on.

9. It is important to observe, and for a reason which will appear, to remember that the channels mentioned in the last table do not flow throughout their entire length in the kharif season. This is the case also with many other branches on the Fuleli. If, therefore, something is not done to provide a remedy, these tail areas on the branches, which get no kharif supply, will certainly be in danger of going completely out of cultivation, after the Lloyd Barrage and Canals come into operation, with results which will obviously be disastrous. In the absence of additional regulators all lands unaffected by command of the Alipur Regulator must suffer when the river is low. It is also pointed out that when rain falls the low-lying land at the tail of the Fuleli, where the rainfall tends to be the heaviest, quickly becomes submerged and no canal water is required in such circumstances for several days. Water must, however, be admitted into the canal in sufficient quantity to irrigate the upper high-lying lands not subject to submergence and the tail lands are then very liable to be flooded. In this case again, it is only the lands commanded by the Alipur Regulator which can be given their due requirements of water in such circumstances. It will be recognized that lands served by an unregulated canal without means of control must normally suffer, either from drought or flood, demonstrating the immediate necessity for providing complete control of the Fuleli Main Canal by means of regulators. Hitherto in dealing with future conditions of irrigation on the Fuleli the results of an average year have been considered, but the Fuleli is liable even now to suffer in years of low inundation or late rise or early fall. After the Barrage canals begin to operate the effects of such bad years will be accentuated and intensified unless the improvements proposed are given effect to. These improvements will not only safeguard the interests of the Fuleli zamindars in the average normal years but will greatly benefit them in conditions of low inundation. The measures proposed are also immediately necessary to allow of equitable distribution of available supplies to all zamindars, which even in existing conditions, irrespective of the effects of operation of the Barrage Canals, is an impossibility.

To fulfil Government's pledges that the interests of the Fuleli tract as a whole will be safeguarded the following works are therefore necessary :—

(*a*) Construction of three additional cross regulators on the main canal at miles 27, 64 and 71.

(*b*) Provision of distributaries taking off above the cross regulators to supply the karias taking off at present direct from the main canal.

(*c*) Improvements to the Fuleli Escape to enable it to function efficiently.

(*d*) Regrading and re-sectioning of branch canals including construction of cross-regulators and escapes where necessary and moduling karia heads.

(*e*) Widening the main canal to admit an extra discharge of 1,500 cusecs at head.

(*f*) Improvements to Alipur Regulator.

10. The necessity for each of these works is explained below :—

New Regulators.

(*a*) At present there is only one regulator across the Fuleli Canal at mile 46 (Alipur) and it is therefore impossible to regulate and distribute the available supplies equitably in the several sections. Three more cross-regulators, one at mile 27, the second in mile 64 and the third in mile 71, are considered necessary for this purpose. The three new cross-regulators with the existing Alipur Regulator at mile 46, and regulators at the heads of branches taking off at the extreme tail of the Fuleli, will divide the main canal into 5 sections, so that in the early abkalani, when supplies are low, each section can be worked in rotation and be given full supply alternately with others. This is not possible in the absence of cross-regulators. It will also be possible by means of these regulators to protect the lower low-lying reach from floods more effectively at the time of rainfall.

New distributaries.

(*b*) When water is headed up at the regulators the karias taking off directly from the main canal immediately below the regulators must obviously suffer. New distributaries on both sides, taking off above each regulator and serving the area down to command of the next regulator, will therefore be necessary to supply these karias.

Fuleli Escape Improvements.

(*c*) The Fuleli Escape does not function efficiently at present. When rain falls this generally occurs at a time when the canal is running full. The zamindars then immediately close their karias, especially those in the lower reach. The level of water at the head of the canal is also reduced as promptly as possible or the canal may be closed entirely, according to the necessities of the case, but until the effect of this partial or total closure at the head has had time to be felt lower down the water accumulates at the tail of the canal and causes breaches and flooding of the standing cultivation. It is therefore very necessary to improve the Fuleli Escape so that it may function efficiently and be able to pass off all surplus discharge rapidly at all times.

Regrading Branch Canals and providing regulators and modules.

(*d*) As areas at the tails of most of the branch canals, which at present receive rabi water only, are to be given kharif supplies, regrading of the branches to carry the designed kharif discharges right up to the tail is necessary. For the proper control of water, cross regulators are also required on the branches, similarly as on the

main canal, and escapes are required at suitable points to prevent the occurrence of breaches.

It has been pointed out above that certain branch canals do not flow throughout their entire length during the kharif season. On the Fuleli there are at present actually 33 branches. Of these, 27 will remain in operation and the area commanded by the others will be transferred to the Barrage Canals. Of these 27, there are 14 cases in which supply does not reach the tails under existing conditions, while other branches suffer to a greater or less degree from deficiency at the tail. This is evidenced by comparison of the figures of kharif and rabi cultivation depending on the upper and lower halves of branches. Such a comparison shows that while the kharif intensities in the upper halves of the branches may be from twice to three times the kharif intensities in the lower halves, the rabi intensities are generally from twice to three times as great in the tail sections, showing that the tail sections in general get little kharif supply.

Now all these 14 cases, with three exceptions, occur below the 57th mile.

The three exceptions* mentioned take off above the Alipur Regulator. These facts very clearly demonstrate :—

(i) that provision of regulators alone is insufficient to ensure equitable distribution to individual karias, and

(ii) that the first essential to any improved system of distribution in the canal is effective control of the water after it enters the branches so that it will not all be absorbed by the karias or outlets in the upper reaches. Proof that such excessive draw-off does occur lies in the fact that the increased discharge of 275 cusecs which has been obtained after construction of the new Jamshora head regulator in 1924, has all been absorbed in the upper portion of the canal above Alipur Regulator and no additional supply passes below it even when Alipur regulator is fully open. The only proved method of providing control of draw-off so as to ensure equitable distribution is the provision of modules to all karia heads. This method of regulation is common in the Punjab and United Provinces, and in fact wherever irrigation has been developed, and it has already been successfully adopted on many canals in Sind with the most satisfactory results to all concerned. The provision of such modules is an absolutely essential integral part of any scheme of canal remodelling, without which expenditure incurred on widening of canals and provision of regulators would be money wasted.

* Shahwah—16 miles long
Mulchandwah—25 miles long.
Imamwah—29 miles long.
These are all very long branches with innumerable karias taking off from them which are uncontrolled and therefore draw off all excess supply and no water can reach the tail.

(*e*) This work is dealt with in paragraph 11 (below).

Widening main canal.

(*f*) At present the Alipur Regulator cannot be so closed as to obtain complete cut-off. The result is that in time of rain, considerable leakage

Improvements to Alipur Regulator.

occurs through the regulator endangering the canals at the tail. It is proposed to provide regulating gates in substitution for the existing needles at this regulator in order to make a complete closure possible when required.

11. The whole question of the Fuleli improvements has been discussed in conferences by Government officers with the interested zamindars at Badin and at Hyderabad. The zamindars have asked that the supplies in the Fuleli should be increased as they considered that the duties adopted for the remodelling of the branches were too high. They stated the opinion that conditions in the Fuleli tract were similar to those in the Karachi Canals Division where lower duties have been adopted by the Karachi Conferences of 1921 and 1923. As a concession therefore Government have decided to provide increased discharge of 1,500 cusecs in the Fuleli and to widen the Canal at the head to admit this extra discharge, with resulting reduction of the duties of rice and dry crops.

12. The questions which appear to be largely agitating the minds of those interested in the future conditions of the Fuleli Canal are, firstly, whether the Sukkur Barrage will in fact adversely affect the kharif supplies of water in the Fuleli Canal. Secondly, if such adverse effects are likely, what steps should be taken to minimise or overcome them. Thirdly, whether any steps taken to improve the Fuleli can adequately provide for its future needs unless the river is controlled by a Barrage at Kotri or Jherruck or at any other available site on the Indus, and, fourthly, whether the alterations to the Canal, the additional distributaries and the new outlets, are in fact necessary in order to put the irrigation of the Canal on a sound basis in the future.

13. When in 1923, Mr. Shoubridge, then Chief Engineer in Sind, was discussing with the zamindars of the Fuleli the future conditions which will obtain on the Canal he stated that there appeared to be a steady tendency on the part of the Indus to raise its bed and so to now give higher gauge readings for any given discharge in the early part of the season than obtained in former times. If this is true it means that any particular gauge readings will nowadays be obtained slightly earlier at the Fuleli Canal head than was formerly the case. This is an important aspect of the position because it means that, if, for instance, owing to the draw-off from the Indus of the large canals taking off from Sukkur in the early months of the abkalani season, a draw-off which will be more than the existing combined discharges of the inundation canals, taking off between Sukkur and Kotri, in June, the level of the Indus at Fuleli Canal head would otherwise have been lowered by 6″ or even a foot, this foot may actually have been already compensated for by a rise to that extent in the river bed within comparatively recent years. Particular attention is therefore invited to a diagram which has been prepared and forms an

accompaniment to this note. This Diagram (A) shows the gauge readings at which a discharge of 100,000 cusecs is obtained in the Indus at Kotri. These figures have been extracted for the whole period since gauge readings of the Indus at Kotri were first observed and this particular discharge has been selected because it is that normally obtained soon after the first rise of the Indus in the month of June. An examination of the diagram will show that the level at which this discharge is obtained has varied considerably even in the same year and also from one year to another. The diagram is in fact rather similar to the teeth of a saw and the gauge reading tends to be low at the beginning of every year while at the end of the year, that is to say, after the flood season, the gauge reading for the same discharge tends to be higher. But in spite of the saw-tooth character of the diagram it is clear that in the period over which observations have been taken, now extending to more than 25 years, there has been on the whole a very definite rise in the gauge reading equivalent to this discharge. We have therefore clear evidence that Mr. Shoubridge's prophecy that the river would tend to rise in level is true, and there is no reason why that rise in the level of the Indus should not continue in future years. It will be observed that it is in the rabi season that the lower gauge readings are obtained indicating that bed scour has taken place. Now, after the Barrage is fully opened kharif conditions in the Indus below Sukkur will be just as they are at present and we may expect that the silting, which this diagram indicates occurs in nearly every year, will still continue to occur in future. On the other hand during the rabi season there will be much less water in the river than hitherto because almost the whole of the river supply will be entrapped at Sukkur for the right and left bank canals. It may therefore be anticipated that the scour which occurs in the rabi season will be appreciably less in the future.

14. It may, however, be asked what will be the exact effect of the increased draw-off during certain months of the early kharif season at Sukkur? The accompanying table gives actual figures showing what the difference would have been between what actually happened in 1928 and what would have happened had the Lloyd Barrage and Canals Construction canals been open.

15. The figures in the table are obtained in the following way. The actual draw-off of the Barrage Canals given month by month in Volume V of the Barrage Project Report have been plotted. These discharges are averages for the month. The discharges will not vary abruptly from one month to another but will gradually increase in the months of May and June. Instead of taking a flat rate for each month, a sloping line cutting the average for each month has been taken showing the gradual rise. From this curve which has been drawn (Diagram B) the actual withdrawals for June and

July in this particular year have been subtracted. The difference of these is given in the 4th column of the table. The 5th column of the table gives the actual diminution of the gauge reading representing this diminished supply at Kotri. This is obtained from diagram "C" which shows Kotri Gauge readings for discharges of the river during the same year (1928). From this diagram the difference in gauge reading corresponding to any reduction in discharge can be deduced. A single year has been chosen rather than an average of years because, due to the variations in the bed of the river, any average of several years may mean little or nothing. It would be a simple matter to take out a similar table of figures for other years but there is no reason to suppose that the result would be noticeably different.

16. The point is, how will this lowering of the river by ·6 feet to ·7 feet during the greater part of June be met? Referring again to the diagram showing the continuous rise in the river, an examination of this diagram would show that the bed has risen in an average 0·70 feet since the year 1912, so that even if there was no proposal to enlarge the canal the discharge at the head would have been no less in June of the year 1928, after making allowance for the extra draw-off of the Barrage Canals, than it actually was in the year 1912.

17. Nevertheless it is considered a very necessary and safe precaution to take steps to compensate for this loss of head. A part of this scheme is to widen the canal to admit an extra 1,500 cusecs at maximum discharge. It is clear that this widening of the canal will have the effect of admitting additional water at lower gauge readings. Now in the week ending 11th June in 1928, the discharge of the Fuleli was 7,296 and the gauge reading was 15·2. The gauge reading with the Barrage Canals open would have been reduced to 14·5. A glance at diagram "D" will show that under the new conditions a gauge reading of 14·5 will give a discharge of no less than 8,400 cusecs; *i.e.*, the effect of the widening of the canal will be that not only will the reduction of the gauge reading be fully compensated for but there will be an additional 1,100 cusecs entering the canal. Even with a reduction, as on the 4th of June, of 1·2 feet it will be seen that the discharge under the new conditions (column 9 of the table) will be 6,700 as against 6,620 under existing conditions.

It will thus be seen that the measures which it is proposed to take to protect the Fuleli Canal from any possible adverse effect of the Barrage will actually do what is required of them.

18. The question of whether a second Barrage at Jherruck or elsewhere is now required may suitably be dealt with at this point. Such a Barrage could only be required for two purposes.

Firstly, to head up the water level in the rabi season in order to give rabi supplies, and secondly, to raise the river level during the early part of the kharif season in order to compensate for any deficiency in the river at that time. Now in the rabi season practically the whole of the water in the Indus will be required and taken up by the canals taking off above the Barrage at Sukkur. Rabi supplies to Lower Sind cannot therefore be counted on in future conditions.

19. One of the few possible sites for a Barrage would be at Hajipur opposite the southern end of the Ganja Takkar Hill. Even this site is some 20 miles below the Fuleli canal head. In the rabi season, as stated above, there will be an infinitesimal discharge passing down the river below Sukkur. The consequence would be that if the water were to be headed up by a Barrage here the ponded water above the Barrage would be practically still water. Even if this ponded water could be headed up as much as 12 feet at Hajipur the difference of level in the rabi season would not amount to more than a few inches at Fuleli head. In the early part of the kharif season, as has already been shown, the probable reduction in the level of the Indus during the critical period in June will already have been compensated for by the proposed widening of the canal and by the natural rise of the river bed. Any heading up which could be effected at Hajipur would consequently be ineffective at Jamshora where the Fuleli Canal takes off. It would also be unnecessary. Moreover it is very approximately estimated that, even allowing for the transfer of such tools and plant as would be suitable and serviceable from Sukkur for use on the work, the cost of building a Barrage at Hajipur and of excavating the required feeder canals of the Karachi Division from it would be of the order of 12 crores of rupees. As has been shown no advantage would result to the Fuleli Canal due to provision of such a Barrage and therefore no credit could be given to the proposed Barrage for the cultivation on the Fuleli. The present scheme for remodelling the Fuleli must therefore be entirely independent of any proposal to construct a Barrage at Hajipur, Jherruck or elsewhere, and must be considered on its own merits.

20. Another question which has been asked is why, when the proposed full supply discharge of the Fuleli Canal is only being increased by the small margin of 1,500 cusecs, is it necessary to spend as much as Rs. 37·0 lakhs on works for the purpose of preventing loss to the canal in future conditions? Now, the whole scheme has been conceived firstly to insure that any slight reduction in the level of the Indus at the canal head in the month of June shall not cause any loss, but, principally owing to the fact that a large area of high ground, now inadequately irrigated by the Fuleli Canal, is to be transferred for its better irrigation to the Barrage

canals. In order to fully utilise the water thus released in the Fuleli that water has to be transferred from the lands which will in future be irrigated by the Barrage Canals to the lands which are entitled to water from the Fuleli but do not now get it. These lands, to which it is proposed to transfer the water so saved, are situated mostly at the tails of branch canals and at the tail of the main Canal itself. Thus, apart from the comparatively small amount of money necessary to widen the canal at the head, it may be stated that the whole of the remaining Rs. 34 lakhs will be spent in effecting the transfer of water from where it is now being used in a more or less inefficient manner to the efficient irrigation of lands which have long demanded a better supply and for which this water will now be available. The whole scheme has therefore this primary object in view, *viz.* to get the water from where it will no longer be wanted in the Barrage area to the areas which are crying out for it and to distribute the new supplies coming into the canal in an equitable manner.

21. In regard to its financial aspect it may be said that the cost of the remodelling proposed is justifiable in consideration of the new cultivation provided for in areas not having access to irrigational facilities in existing conditions. As is stated in paragraph 5 of this Note the average annual kharif cultivation on the whole area under command of the new Fuleli is 2,86,598 acres. There is in addition an annual average area of irrigated rabi amounting to 16,134 acres. The total average area of irrigated cultivation on this canal thus amounts to 3,02,732 acres. On the area to be transferred to the Barrage Canals the annual average kharif amounts to 39,126 acres and there is in addition an average area of 16,014 acres of Bosi and irrigated Rabi. Of this latter figure it has been assumed that 5,300 acres represents the area of irrigated rabi and the total of irrigated cultivation, kharif and Rabi, is thus 44,246 acres. The balance of annual irrigation in the area which will remain on the Fuleli will thus be 2,58,306 (3,02,732—44,246) acres. Resulting from revision necessitated by the increased discharge 1,500 cusecs provided, and consequent readjustment of duties, an area of 3,50,080 acres may safely be counted on as coming under Kharif irrigation in the area under command of the remodelled Fuleli. The increase in annual irrigation due to the Project will therefore be 91,774 (3,50,080—2,58,306) acres, differing slightly from the original Project forecast. The total cost of the scheme, including all charges, has been estimated at Rs. 49,98,043. Due to the slight modifications and readjustments entailed by the provision of the extra 1,500 cusecs at head, as subsequently decided on, some small variation from this estimated figure of capital cost may result. It is not anticipated, however, that the difference will be material and for the purposes of this forecast the original estimate of Rs. 49,98,043

as capital cost of the scheme is adhered to. The return anticipated will be as under :—

	Rs.	
Increase in Rice cultivation, 1,313 acres at Rs. 4 per acre ...	5,252	
Dry Kharif, 1,01,295 acres at Rs. 3 per acre ...	3,03,885	
		3,09,137
Deduct Land Share of Revenue at 1/10th ...	30,914	
Net share due to improvements ...		2,78,223

Further deduction is also required to be made, however, on account of 10,834 acres of irrigated Rabi, which in future conditions will disappear. At Rs. 2/10 per acre the loss of irrigation share (9/10ths) of revenue on this account will be Rs. 25,595. The final net irrigation share of increased revenue due to the Project will therefore be Rs. 2,52,628 (2,78,223—25,595). The return on Capital expenditure would then be 5·05 per cent. Full allowance having been made for the entire elimination of rabi cultivation under the new conditions it is considered that the estimate now framed of the return which may be expected is a safe and conservative one.

22. To facilitate the execution of the improvements contemplated the canal will be divided into five sections as under, comprising the following portions of the whole remodelling scheme :—

Section.	Works proposed.	Cost of I—Works.
		Rs.
No. 1—From head to mile 27 where the 1st new cross-regulator will be constructed.	Widening the main canal at head Rs. 3·33 lakhs (to be carried out with the 5th section) Regrading and re-sectioning main canal, if necessary, and moduling all direct flow karias; and remodelling and moduling Dodowah and Gajawah ...	1,66,000
No. 2—From mile 27 to mile 43 (*i.e.*, about 8 miles above Alipur Regulator).	Regrading and re-sectioning of the Fuleli, if necessary, including moduling of all direct flow karias; regulator at mile 27; remodelling and moduling Pandhiwah, Mubarakwah, Jagsiwah and Bahawaliwah ...	5,08,064
No. 3—From mile 43 to mile 62 (*i.e.*, 2 miles above the second new regulator).	Regrading and re-sectioning of the Fuleli, if necessary, including moduling of all direct flow karias; improving Alipur Regulator, a new distributary on the right bank to feed Jamsherwah and direct karias extending up to Mirwah Talhar (to be carried out with the 5th section), a new distributary on the right bank from the head of Mirwah Talhar to mile 64; remodelling and moduling Shahwah, Dokiawah, Jamsherwah, Mirwah Talhar, Meherawah, Chandanwah, Imamwah, Janubi. Mulchandwah; a new distributary on the left bank taking off above Alipur Regulator to feed direct karias extending up to Nasir head (to be carried out with the 5th section); and remodelling Nasirwah	10,12,733

Section.	Works proposed.	Cost of I—Works.
		Rs.
No. 4—From mile 62 to mile 70/3.	Regrading and re-sectioning of the Fuleli; Regulator at mile 64; remodelling and moduling the Manikwah; distributaries on the right and left banks	3,14,033
No. 5—From mile 70/3 to tail (mile 81/3).	Regulator at mile 70/3; regrading and re-sectioning of the Fuleli, if necessary, including moduling of direct karias; distributaries on the right and left banks, remodelling and moduling Shadiwah large, Shadiwah right bank distributary, Alibahar karo, Sherwah, Aliwah, Saidawah, Kaziawah, Ghar Kadhan and Sanhi Guni; Remodelling Fuleli escape ...	17,41,270*
		37,37,100

* This includes Rs. 3,33,000 for widening the main canal at head.

23. Owing to the fact that it has not been possible to start the work at the beginning of this year, due to the postponement of the demand for grant in the Legislative Council, it has been found necessary to vary the programme of work slightly from that originally proposed. The general principle will be that improvements will be carried out from the tail of the canal upwards towards the head, with the exception that the widening of the head of the canal will be undertaken simultaneously with the tail section. It is proposed to spend a total of Rs. 7·42 lakhs during the current year. The details of the works to be done this year are given in the statement attached to the supplementary demand statement copies of which have been supplied separately to the members of the Legislative Council.

24. The following points which have been raised in criticism of the scheme may be briefly touched on :—

(1) In regard to the drop in level of the Indus at the Fuleli Head. This has already been dealt with in detail. It has been shown that from the 2nd week in June onwards, in a representative year, there will be no drop as compared with 1912, owing to the continuous rise in the river level since that year, but that in any case any possible lowering of river levels at the critical period has been more than fully compensated for by the increased discharge which will be obtained from the widened canal.

(2) It has been suggested that the increased cultivation will amount to 23,431 acres only and not to 1,02,000 acres, neglecting loss of rabi as was done previously, or 92,000 in round figures, as now arrived at. This suggestion arises out of what appears to be a misapprehension of the position because, as already explained in detail, while the existing cultivation on the transferred area will still continue no credit is being taken for it on the Barrage scheme, and the profits of this scheme must be justified on the actual

expansion in cultivation in the remaining area retained on the Fuleli.

(3) The question of maintenance charges has been raised. It is estimated that this scheme will reduce the maintenance charges rather than increase them, because a very large amount of silt clearance, which is now an annual necessity, will not be required to be done in future on the remodelled canal and the additional cost of upkeep of the new work will not amount to as much as will be saved in this way.

(4) In the estimate now prepared of the return the assessment on dry crop has been estimated separately, thus meeting the point raised in regard to it. The estimate of Rs. 49·98 lakhs is not arrived at in any way as being limited by the figure which can be sanctioned by the Local Government without reference to the Secretary of State. Actually the limiting figure requiring such a reference is Rs. 50,00,000 for *works* only. The proposals now put before the Legislative Council involve expenditure of Rs. 37·37 lakhs for *works* only and consequently the cost of the scheme could actually have been increased by as much as 13 lakhs before it became necessary to submit it for the sanction of the Secretary of State.

25. In regard to the question of a Barrage at Jherruck, it has been shown already that this site is too far down the river to be of any advantage to this canal. A Barrage at Hajipur would also do no good to the Fuleli canal and justification for such a Barrage must be judged solely on its application to the Karachi canals below it. To reject or delay the remodelling of the Fuleli Canal in consideration of the possibility of future construction of a Barrage which could not benefit the Fuleli in any way can obviously not be to the best interests of the canal, or of the zamindars and cultivators depending on it.

26. Certain members of the Legislative Council have expressed the opinion that the remodelling of these canals in lower Sind should be considered as one complete scheme and not as several independent schemes. This suggestion has received the careful consideration of Government. If it could be shown that the remodelling now proposed in the Fuleli would affect adversely any scheme lower down the river, there might be some ground for this opinion, but the Fuleli canal is a self-contained area and it would be impossible to show that such work as is being done on that area would affect the Karachi Canals in any possible way. It is therefore only reasonable that it should be considered separately on its own merits. To delay the scheme in order to consider it along with other quite independent schemes, with which it has nothing in common, would give no administrative advantages. Government take this view of the position, in which they are supported by the Controller of Civil Accounts, to whom the question has been referred for opinion.

27. Much of the opposition to this scheme appears to arise out of complete misapprehension of what is implied by the term "Module." A type of masonry sluice has been evolved which has been so designated but a more descriptive term would be "Semi automatic sluice." The object aimed at and the purpose served by these sluices is not to reduce the supply of water to any zamindar below what is necessary for the whole of his existing cultivation, together with any additional area which he may be able to cultivate, but to insure that the zaminder will at all times have access to a known supply so long as the full designed discharge is available at the canal or branch head. In this way the zamindar and the cultivator will be in a position to be able to make a more economic utilisation of their due allowance of water because they will know not only that they will get a steady supply but also that they may rely on getting the supply to which they are entitled. In all such matters however the most convincing proof is obtained from practical application and demonstration. So far, wherever these sluices have been provided, the result has been a very remarkable diminution in the volume of complaints received from the cultivators of deficiency of water. The cultivation on distributaries where these sluices have been provided has increased, more particularly in the lower reaches of the distributaries, and such increase of cultivation has been obtained *without any decrease in the cultivation in the higher reaches*, thus showing that the steadier supply has enabled a more economical use to be made of the water available.

28. It has been suggested that the scheme need not be spread over such a large number of years and that by working day and night it might be completed in a very much shorter time. It may be pointed out that while day and night work is possible for a certain class of machine work in new canals and channels, night work is not possible with manual labour. Furthermore, the Fuleli Canal will have to be kept running and it will continue irrigating its existing area. In consequence only the normal working season will be available for the remodelling work.

29. The criticism has been advanced that as the return anticipated from this remodelling approximates to the rate at which money is borrowed, Government should not undertake the work. It may be pointed out that this work is not being undertaken by Government as a remunerative project, although the expenditure contemplated will actually involve no loss. The scheme is essentially a protective work and is justified as being required to meet the new conditions which will arise after the Sukkur Barrage Canals operate. As already pointed out, the bulk of the expenditure is being undertaken in order to transfer the water supply, which will become available after the transfer of certain areas to the Sukkur Barrage Canals, for use in irrigating lands on the canals which do not now

obtain a sufficient supply. If these works are not undertaken, it will not be possible to transfer the water so released to the area where it is required and where improvement of conditions is insistently demanded by the zamindars.

30. Although, as has been stated, the Fuleli Canal remodelling scheme can and should be considered entirely as a self-contained project, it may be of interest to examine the rough preliminary details of works contemplated to safeguard the future irrigation in the Karachi Division. The following table gives details and preliminary rough estimate of cost of such works :—

Karachi Canals Division.

	Rs.
(*a*) Remodelling Pinyari Canal System including Gungri and Laikpur Canals and their branches	18,68,000
(*b*) Remodelling Pinyari Canal System including Sattah Canal and branches.	4,00,000
(*c*) Remodelling Pinyari Canal System including Indus Canals Left Bank ...	12,00,000
(*d*) Remodelling Pinyari Canal System including Indus Canals Right Bank...	5,00,000
(*e*) Kalri and Narichach remodelling project	11,00,000
(*f*) Remodelling the Baghar Canal and branches	3,23,000
Total ...	53,91,000
say	54,00,000

It may be noted that the Engineering staff of the Karachi Canals Division is now actively engaged in working out details of these projects. The detailed projects, when received, will show some deviation from the figures of cost now given but it is considered probable that the anticipated total cost will approximate to the final cost of the works required on these canals. The Karachi Canals Projects will be considered not only in reference to whether they can be carried out without loss to Government but also whether they are necessitated by the conditions supervening on the operation of the Lloyd Barrage Canals and the extent to which Government are committed to their execution in fulfilment of their accepted obligation that interests of the Canals of Lower Sind will not be allowed to suffer.

Table showing the effect of Lloyd Barrage and Canals Construction withdrawals on the Fuleli during the months of June and July 1928.

Date	Estimated Barrage withdrawals	Actual withdrawals (1928) between Sukkur and Kotri (excluding those of Fuleli)	Extra draw-off due to the Lloyd Barrage Canals	Reduction in gauge reading at Kotri (from Diagram C) due to draw-off column 4	Gauge reading of Fuleli on this date	Discharge on this date as observed.	Gauge reading of Fuleli due to lowered level of river	Corresponding discharge of Fuleli without remodelling	Discharges which will be obtained in Fuleli after the canal is widened and remodelled	Remarks
1	2	3	4	5	6	7	8	9	10	11
	Cusecs	Cusecs	Cusecs	Ft.	Ft.	Cusecs	Ft.	Cusecs	Cusecs	
4th June ...	43,900	13,815	30,085	1·30	13·90	6,620	12·70	5,350	6,700	
11th June ...	45,300	25,226	20,074	0·70	15·20	7,296	14·50	6,750	8,400	
18th June ...	45,926	26,661	19,265	0·70	16·80	9,170	16·10	9,200	10,000	
25th June ...	45,926	27,577	18,346	0·60	17·00	9,530	16·40	8,550	10,300	
2nd July ...	45,926	25,285	20,641	0·60	15·10	7,200	14·50	6,750	8,400	
9th July ...	45,926	28,741	17,185	0·50	16·00	8,500	15·50	7,650	9,400	
16th July ...	45,926	39,664	6,262	0·20	17·00	9,702	16·80	9,000	10,700	
23rd July ...	45,926	41,286	4,640	0·20	17·60	9,796	17·40	9,700	11,350	
28th July ...	45,926	43,779	2,147	0·10	17·00	8,183	16·90	9,150	10,850	

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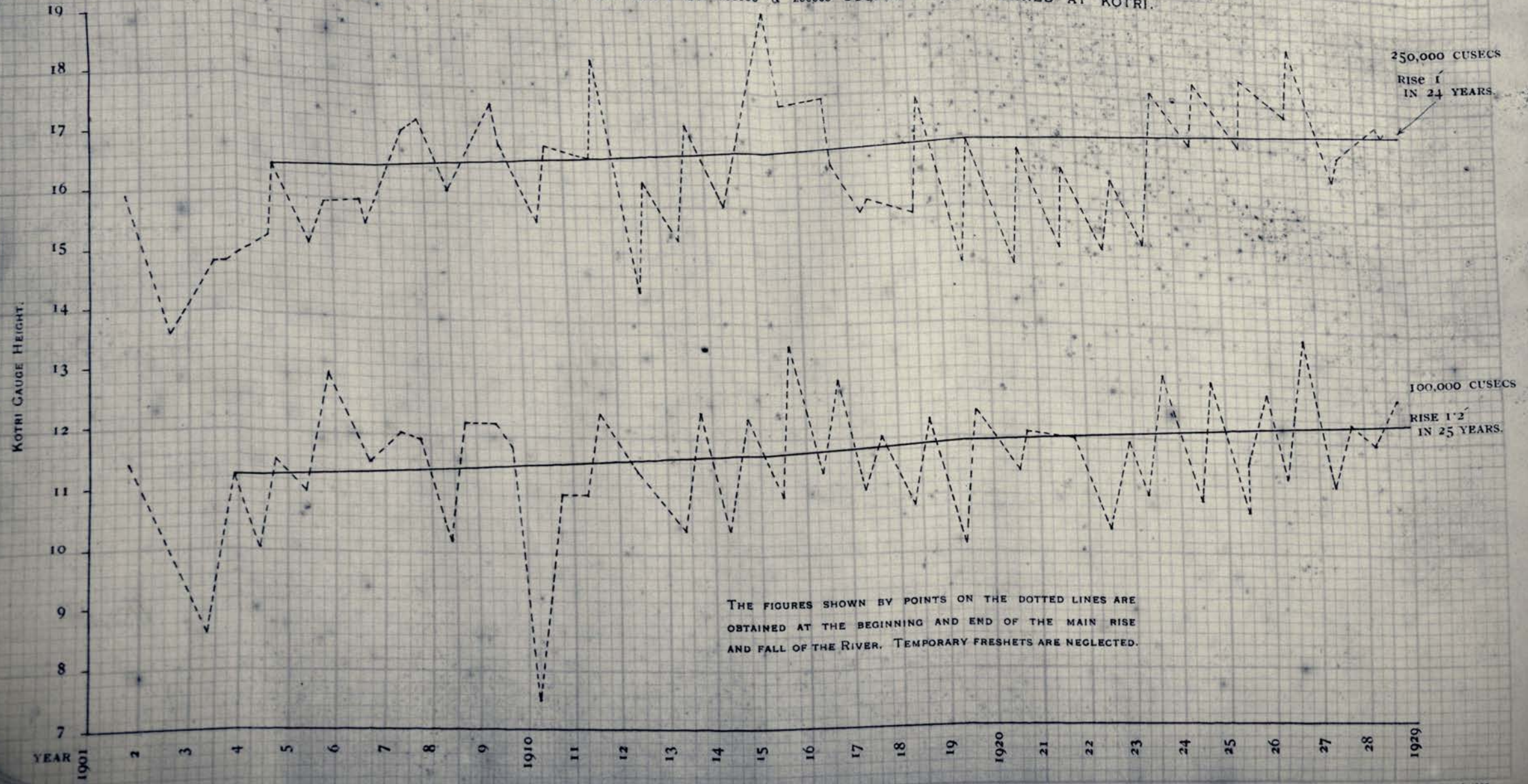
DIAGRAM "A"

GAUGE READINGS AT WHICH DISCHARGES OF 100000 & 250000 CUSECS WERE OBTAINED AT KOTRI.



THE FIGURES SHOWN BY POINTS ON THE DOTTED LINES ARE OBTAINED AT THE BEGINNING AND END OF THE MAIN RISE AND FALL OF THE RIVER. TEMPORARY FRESHETS ARE NEGLECTED.

G.P.I. O. POONA. 1929.

DIAGRAM "B"

Comparing L. B. & C. C. withdrawals with the withdrawals from the Canals which will be replaced by L.B. & C.C.

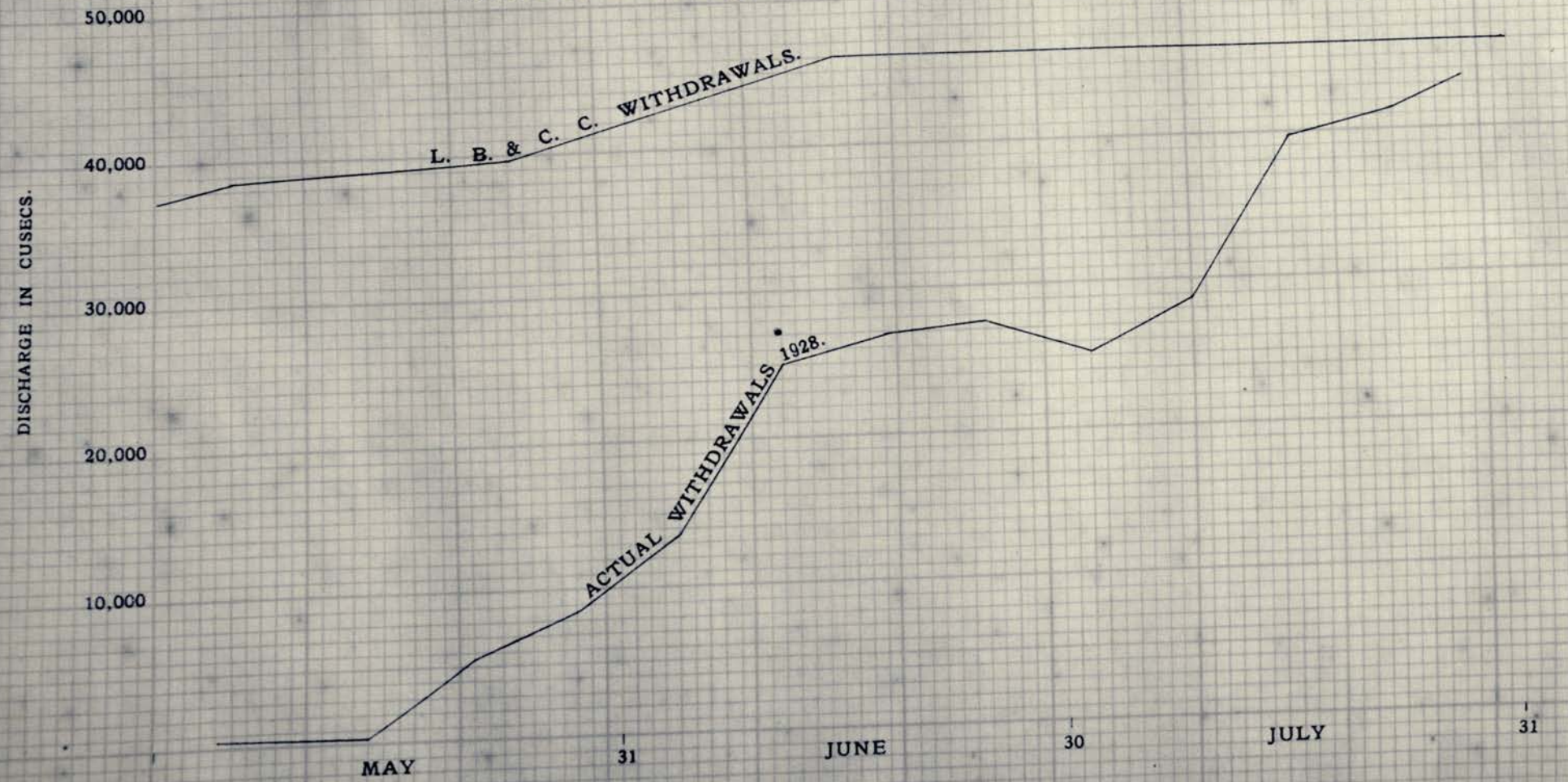
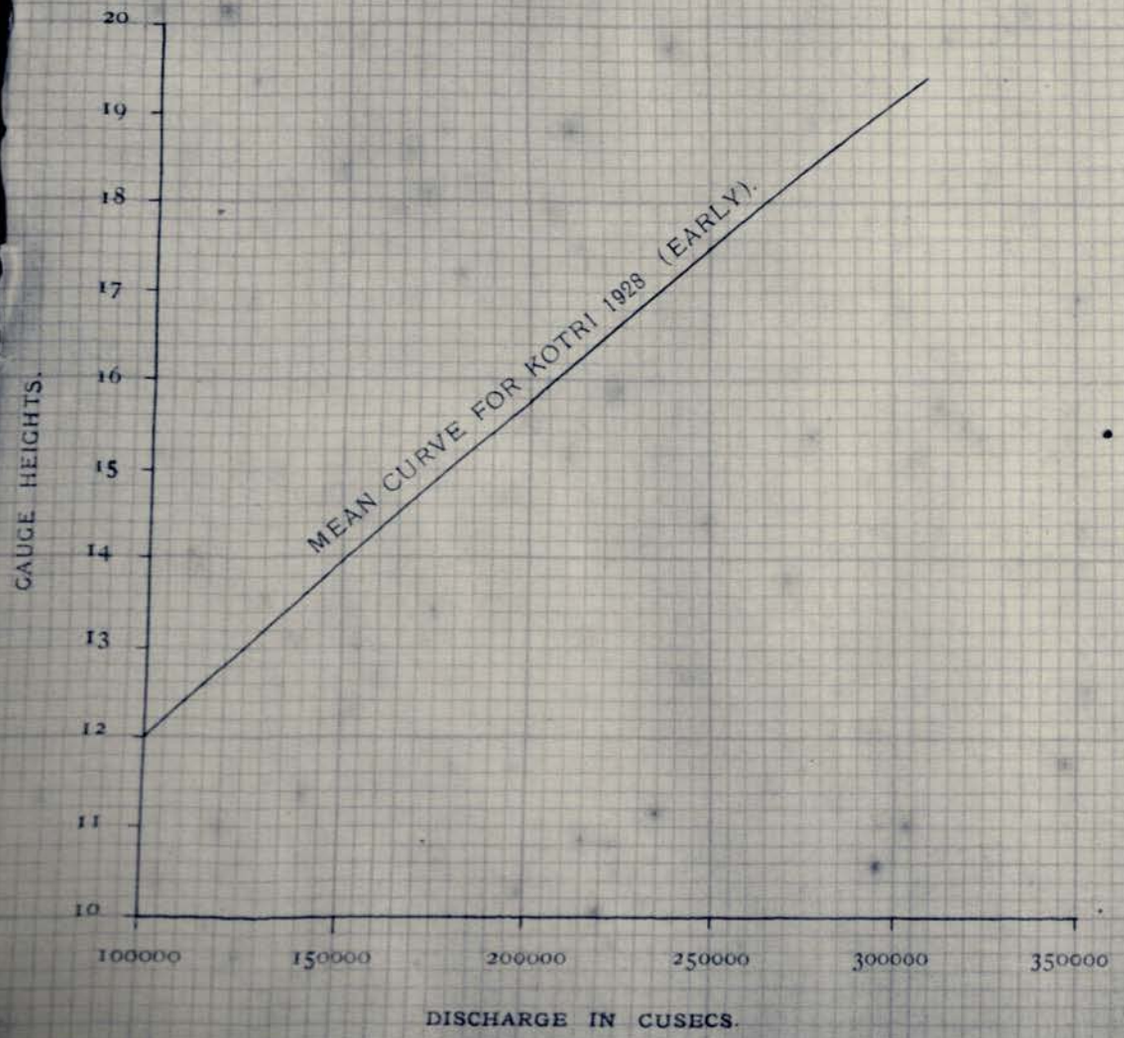


DIAGRAM "C"

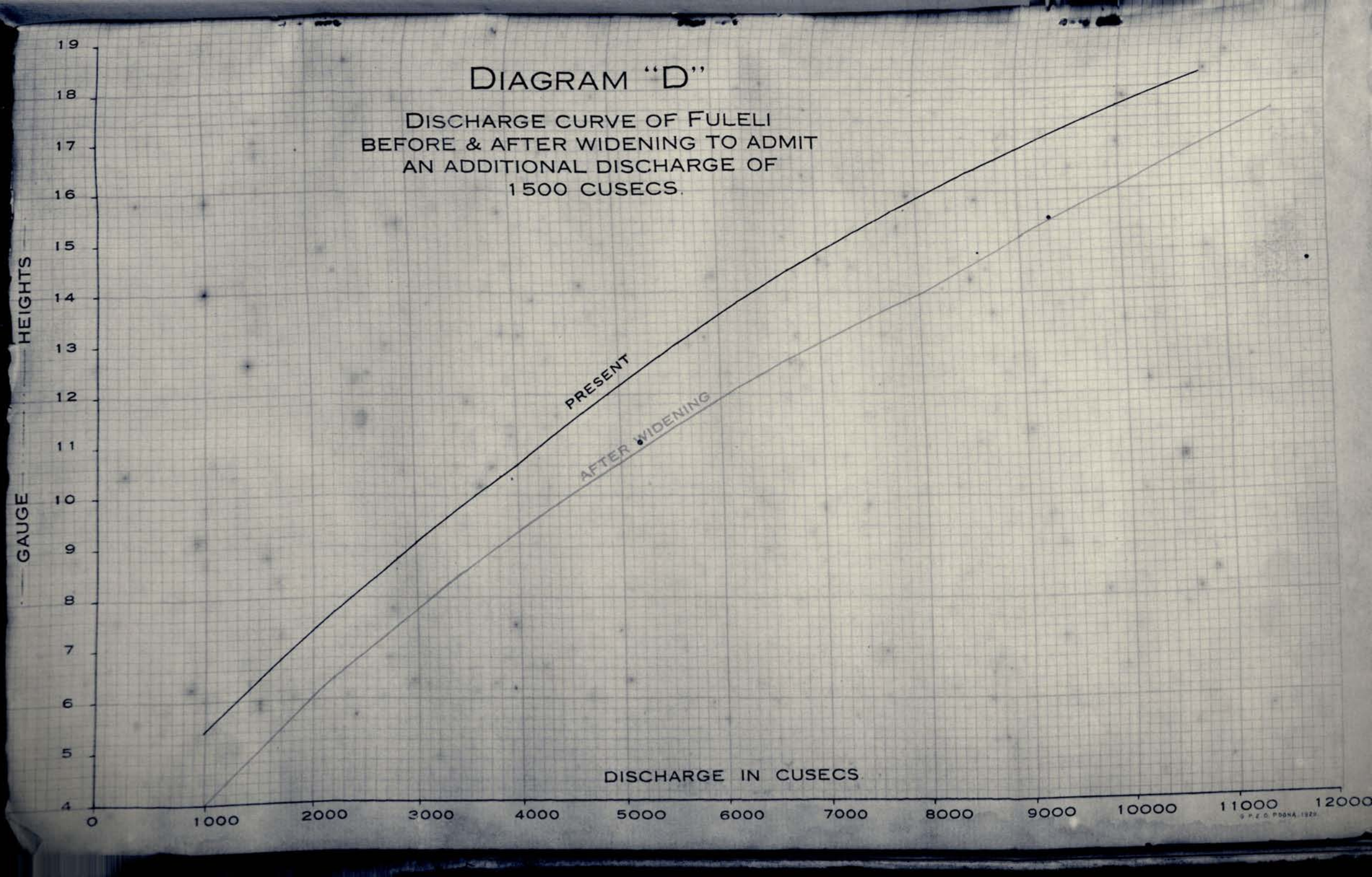


Date	Average Discharge Of The River At Kotri.	Corresponding Kotri Gauge Reading.	Reduction In Discharge Due To Barrage Canals Withdrawals. Col. 4 of Statement.	Reduced Discharge At Kotri.	Corresponding Gauge Reading.	Drop In Water Level.
1	2	3	4	5	6	7
	Thousand Cusecs.	Feet.	Cusecs.	Thousand Cusecs.	Feet.	Feet.
4th June	170	14·70	30,085	140	13·50	1·20
11th ,,	210	16·10	20,074	190	15·40	0·70
18th ,,	240	17·20	19,265	221	16·50	0·70
25th ,,	260	17·80	18,346	240	17·20	0·60
2nd ,,	226	16·60	20,641	205	16·00	0·60
9th ,,	216	16·30	17,185	200	15·80	0·50
16th ,,	260	17·90	6,262	255	17·70	0·20
23rd ,,	288	18·70	4,640	283	18·50	0·20
28th ,,	260	17·90	2,147	258	17·80	0·10

G. P. Z. D. POONA 1929

DIAGRAM "D"

DISCHARGE CURVE OF FULELI BEFORE & AFTER WIDENING TO ADMIT AN ADDITIONAL DISCHARGE OF 1500 CUSECS.



A
H. M. D. D.

BOMBAY DEVELOPMENT DIRECTORATE

5

REPORT

by

Sir Alexander Gibb

on the

BACK BAY RECLAMATION SCHEME

FEBRUARY, 1926

[Price As. 3 or 4d.]

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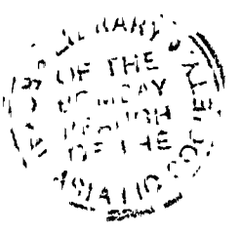
BOMBAY DEVELOPMENT DIRECTORATE

REPORT

ON THE

BACK BAY RECLAMATION SCHEME

FEBRUARY, 1926



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To

The Director of Development,
Bombay

Sir,

BACK BAY RECLAMATION SCHEME.

In accordance with the instructions contained in your letter dated the 11th January 1926, I have the honour to submit for your consideration my report on the Back Bay Reclamation Scheme.

2. The terms of reference contained in your instructions were :—

"To consider and report upon the present situation of the work in connection with the Back Bay Reclamation Scheme, and, where possible, to submit for the consideration of Government any suggestions for its more efficient, expeditious and economical completion."

3. The report being desired by the middle of February 1926, I have given the subject the fullest possible consideration within the limited time at my disposal. Such documents, drawings and figures as are pertinent to the matters under consideration have been placed at my disposal; I have visited the sites of the works and quarries, have inspected the Dredgers at work and have interviewed and cross-examined those in charge of the various sections of the works and machinery. I have also seen the Chief Accountant of the Development Directorate and have generally examined the methods by which the accounts are kept and the money is paid.

4. I have read the documents and reports dealing with the past history of the Scheme and have examined the drawings and estimates for the work, past, present and future. It has not been possible on account of the restricted time available to check the quantities or to verify the prices supplied by the Engineers in detail and I have therefore assumed these as being generally correct for the purposes of my report. Where it has been possible I have compared them with prices for work in similar situations with satisfactory results.

5. The position which presents itself today is as follows :—The Consulting Engineer's original estimate for the Scheme in September 1919 was 367·61 lakhs of rupees. Work in the field was started in January 1921. Towards the end of the same year the late Chief Engineer revised this estimate and increased it to 702·43 lakhs of rupees: neither of these amounts include interest. On the same basis the present Chief Engineer now estimates that, with the present programme, about 1,100 lakhs of rupees may be taken as the approximate sum for completing the whole scheme as originally designed, exclusive of interest. The accounts show that up to the end of December 1925, 550·74 lakhs of Rupees have been spent leaving about 650 lakhs of Rupees still to be expended on engineering works alone but exclusive of interest.

6. The matter of most vital importance is that of deciding how far the work should be carried on to bring into effect the best economical and commercial situation and after due consideration, I am faced with the following conclusions :—

(*a*) That in deciding how far the work should be carried on to arrive at the best economical and commercial situation, future expenditure only can be considered. The money expended up to the present time does not and cannot enter into the calculations.

(*b*) That provided the land reclaimed on the whole or any part of the area be let within an economical time, at a price exceeding the actual cost from now onwards with interest, the Government must be placed in a better financial position by completing the whole or part of such area than they will be in if the work is not proceeded with.

(*c*) That the results of the dredging up to the present are most unsatisfactory and although they may at times show some improvement, I am of opinion that, even though the restrictions by the Indian Marine and the Bombay Port Trust Authorities were removed, they are not ever likely to be economical. That the reason for this is the unsuitability of the dredging plant for dealing with the material as it exists both in the Harbour and in Back Bay. Although I am informed that the borings have been found substantially correct in so far as hard and soft materials are concerned, the nature of these materials is, in the main, either too hard to obtain an economical output for the dredger or too soft to provide *satisfactory filling* for the purpose of reclamation. Added to this a very large portion of the material is situated at too great a distance from the site of the Reclamation to be pumped economically with the dredging plant as specified and delivered.

(*d*) That there is however soft clay available in the harbour within working distance of the Reclamation Block No. 8, which could be pumped with the assistance of the floating shore dredging plant in sufficient quantities to complete this area. That this material, though I could not recommend it generally for the reclamation of land which it is intended to build over, would nevertheless be suitable for Block No. 8 which I understand is to be utilised for parade purposes and into which a substantial depth of hard clay has already been pumped. The dredging plant will probably sell for a better value if the dredger has proved herself by dredging in Bombay more approximately to the quantity of material for which she was designed.

(*e*) That all reasonable care and skill has been exercised by those in charge of the work to secure the best results out of the dredging plant and in addition that the working costs of the dredging plant per annum are less than the original estimates provided for. The abnormally high cost of the dredged filling has been entirely due to deficiency in output.

(*f*) That the present cost of the filling with moorum compares favourably with the dredging cost up to date. That if the quantity of moorum now being brought on to the work is increased it is reasonable to expect that the cost per unit may be reduced, as more favourable Railway rates should be obtainable. That the moorum filling is better suited for the present reclamation purposes in every respect than the dredged filling and the use of it will save considerable money when the development of the land takes place. That, unlike dredging, the rate of reclamation by moorum filling can be increased, diminished or suspended if and when necessary without substantial extra cost and as much or as little of it can be deposited as is desired at a time. From investigations I am satisfied that sufficient moorum can be economically obtained for any purposes of the reclamation.

(*g*) That apart from the dredging the works comprised in the reclamation have been designed efficiently and carried on economically and in some cases the costs have been less than the estimates. The standard of work and the rate of progress both compare favourably with those of similar works in other parts of the world. I further consider that the scale of establishment charges is a reasonable one for works of this nature.

(*h*) With regard to the sea wall I have not had an opportunity of witnessing the effect of a monsoon sea at the site but my experience would lead me to the conclusion that the design is sufficient for what may be expected when the reclamation is completed with the protection afforded by the configuration of the Bay and the position of the reefs. It is advisable to call attention to the fact that, until such time as the reclamation is eventually completed, there will always be a possibility of the sea wall being damaged

and requiring a certain amount of repairs after heavy monsoon seas. This could be minimised by the tipping of sufficient filling behind the wall after the maximum of silting referred to hereafter has taken place. The bank thus formed might be utilised for a marine drive and there are possibilities in this connection.

7. Having given due consideration to these conclusions, I have the honour to recommend the following for your consideration :—

(*a*) That the dredging operations in Back Bay shall be stopped after the close of the present dredging season and the plant in use there disposed of on the most favourable terms. I estimate an approximate value of the plant at 9·50 lakhs of Rupees though the prices will entirely depend on obtaining a market, and this is an uncertain factor.

(*b*) That as soon as the intermediate floating pumping station is repaired, which I understand will be in about a fortnight's time, the Sir George Lloyd Dredger should be moved to a point S. E. of its present position and should pump soft clay into Block No. 8. A small retaining bank of moorum should be deposited round this area of a sufficient height to allow the material to be pumped to the specified level with the necessary allowance for shrinkage. Accurate quantities required for this area are not at present available, but I am satisfied that the work can be completed by not later than the end of the next dredging season, *i.e.*, April 1927. The cost of completing this Block with the addition of the surfacing at present rates will amount approximately to 27·50 lakhs of Rupees. There is a possibility that this figure may be improved upon.

(*c*) That on the completion of Block No. 8 by pumping, the Dredger in the Harbour should be stopped forthwith and the remainder of the dredging plant should be disposed of at the best possible terms. On the same lines as before I estimate the approximate value of the plant at 14·50 lakhs of Rupees.

(*d*) That provided moorum filling can be obtained at a reasonable price, Block Nos. 1 and 2 should be reclaimed by means of this material and completed by a date which would be most likely to give an advantageous sale. At present rates this would cost approximately 45·50 lakhs of Rupees, but again I anticipate there should be a reduction in this cost.

(*e*) That the timber gantry should be continued and completed over the site of the sea wall not at present constructed, that the rubble bank should be tipped from this gantry to about half tide level and that the inside slope of this bank together with the remainder of the bank enclosing Blocks 3, 4, 5, 6 and 7 should be made watertight with moorum backing for half its height. As the site of the reclamation within the bank silts up during the monsoons the level of the stone bank and the moorum backing should be gradually raised. I have no sample of the sand and silt laden water which obtains in the Back Bay during the monsoon and am therefore unable to predict as to the amount of accretions from silting which may be expected. From a description of the water, however, this should be considerable and I recommend that samples should be taken during the next monsoon. The estimates for the cost of this item of work including the final completion of the wall will amount approximately to 20·50 lakhs of Rupees.

(*f*) That, if it is considered at a later date that all or any of Blocks Nos. 3, 4, 5, 6 and 7 can be disposed of advantageously at any time, then the reclamation above the level of the sand or silt deposited should be completed as and when required with moorum dry filling. As soon as the whole area is reclaimed the sea wall should be completed. The cost of filling this area with moorum and making no allowance for silting, at the present rates, would amount approximately to 204 lakhs of Rupees, but again this sum must be taken as an approximation only. The cost of the work would be reduced by any silting which might have been deposited before the moorum filling was commenced. Owing to the levels of the reclamation

and the height of the tides, it is not probable that the silting would amount to more than 33 per cent. of the total filling, but, if this figure was attained there would be a saving of 68 lakhs of Rupees at the rates on which these estimates are framed.

(*g*) That in the event of the suggested or any modified programme being adopted, it is essential that a revised working scheme carefully thought out and a reliable detailed estimate of the work proposed be prepared, submitted to and approved by Government at the earliest possible moment. Further that accurate progress in money diagrams should be kept throughout the construction of the work so that it may be possible at any time to see how matters stand and whether the approved programme is being worked to as regards quantities, money and time.

(*h*) If it is possible to obtain experienced, efficient and substantial contractors, I advocate the general employment of these rather than departmental labour for the completion of the work. By having firm contracts the Government will be in a position to know with more certainty what their liabilities are before the work carried on in the manner advocated is commenced. In the event of adopting this procedure, however, it is essential that the contract particulars and documents should be carefully drawn up by persons experienced in the letting of contracts, otherwise the results may be disappointing.

8. In arriving at the conclusions enumerated, and submitting the recommendations given above, I have considered the best means for dealing only with the situation as it presents itself today. I have purposely avoided the past except where it is irrevocably bound up with the future.

9. As I have already stated it has not been possible in the time available for me to check the accuracy of the figures which have been given for the costs of the work. I have the greatest reluctance in putting forward figures which I have not been able to check throughout and I suggest that it would be expedient to have a concise and reliable scheme drawn up on the lines decided upon with the estimates carefully checked before definitely concluding what the costs will be.

10. The foregoing recommendations are submitted with a view to completing the work in the most efficient, expeditious and economical manner possible and the summary below may serve for a guide as to the cost of carrying them out. The figures do not include the extra amount required for the development of the reclaimed land, nor has consideration been given, when estimating the prices per square yard, to the land reserved for open spaces and roads. In addition nothing has been included in respect of interest as this amount will vary with the time at which it is decided to complete the various Blocks and also will be dependent on the dates of the sales of the land.

SUMMARY.

Completion of reclamation in Block 8 ..	27·50	Lakhs	Rupees.
Completion of reclamation in Blocks 1 & 2..	45·50	,,	,,
Completion of reclamation in Blocks 3 to 7 .	204·00	,,	,,
Completion of Sea Wall, etc. ..	20·50	,,	,,
Contingencies 10 per cent.	29·76	,,	,,
Establishment charges, etc., 10 per cent. ..	32·74	,,	,,
	360·00	,,	,,
Amount estimated to be realised for the Dredging Plant	24·00	,,	,,
	336·00	Lakhs	Rupees.

Dividing the sum of 336 lakhs of Rupees by 1,145 acres gives a cost of 6·06 Rupees per square yard, which is the extra price which it will cost from now on to carry the scheme to completion for undeveloped land. To this amount must

be added a charge for interest and for the development of the land into building blocks. I have abstained from commenting on the value which may be obtained from the land sold or the probable rate of absorption of the land, as these are matters which you are better able to give an opinion on than I am.

11. In framing this report I have had the advantages of the experiences and collaboration of my partner Mr. Rustat Blake, who prior to joining me was a partner in the late Sir John Wolfe Barry's firm and of the Chief Engineer of our Bombay Office, Mr. Cyril G. Stileman, who was in charge of the Sewri-Mazagon Reclamation whilst he was Deputy Chief Engineer of the Bombay Port Trust and whose local knowledge has been of great service. I would also tender my thanks to you and the members of your staff for the valuable assistance you have rendered to me in so readily placing at my disposal all available documents.

I have the honour to be,

Sir,

Your most obedient servant,

ALEXANDER GIBB.

REPORT OF THE MEMBERS

OF THE

FALLOW RULES COMMITTEE, SIND.

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REPORT OF THE MEMBERS

OF THE

FALLOW RULES COMMITTEE, SIND.

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Report of the Official Members of the Fallow Rules Committee.

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Report of the Official Members

OF THE

Fallow Rules Committee.

L(IV) 235.

(To be inserted in front of the Report of the Official Members of the Fallow Rules Committee.)

No. 27 OF 1926.
Karachi, 31st May 1926.

FROM

W. F. HUDSON, ESQUIRE, C.I.E., M.L.A.,
S. H COVERNTON, ESQUIRE, I.C.S.,
C. M. LANE, ESQUIRE.

To

THE SECRETARY TO GOVERNMENT,
REVENUE DEPARTMENT,
BOMBAY.

Subject:—Fallow Rules Committee.

Sir,

With reference to Government Press Note No. L. C. 1348-B., dated 24th August 1925 (Revenue Department), we have the honour to submit our report.

2. We regret that the Committee have been unable to arrive at unanimous conclusions. Our Non-Official Colleagues are submitting a separate report.

3. We desire to bring to the notice of Government the excellent work of Mr. Abdul Kadir Muhammad Hussain, who has proved himself a most competent Secretary and has spared no pains to assist us in every possible way.

We have, etc.,

(Sd.) W. F. HUDSON,
(Sd.) S. H. COVERNTON,
(Sd.) C. M. LANE.

L (IV) 468

KARACHI: THE COMMISSIONER'S PRINTING PRESS.

INTRODUCTORY.

1. At the Session of the Bombay Legislative Council held on 19th July 1925, the following resolution was adopted by the Council:—

> "This Council recommends to His Excellency the Governor in Council that a mixed Committee of official and non-official members of the Council, with a majority of the latter, be appointed to enquire into the whole question of the Fallow Rules in Sind and to make such recommendations as they may please or the modification, revision or repeal of any of the said rules which they consider to operate unfairly upon the zamindar.
>
> The Committee should consider whether the zamindars have a lien on forfeited lands and, if so, on what conditions they should be restored."

2. In pursuance of this resolution a Committee consisting of the following gentlemen was appointed :—

Mr. P. E. Percival, C. I. E., I. C. S. (Chairman).
„ S. H. Covernton, I. C. S.
„ C. M. Lane, Superintending Engineer.
Khan Bahadur Shah Nawaz Khan Bhutto, C. I. E., O. B. E., M. L. C.
Mr. Mahomed Ayub Shah Mahomed Khuhro, M. L. C.
Mr. Nur Mahomed B. A., LL. B., M. L C.
Sayed Mahomed Kamil Shah, M. L. C.
with Mr. Abdul Kadir Mahomed Hussain, Deputy Collector, Hyderabad, as its Secretary.

3. The terms of reference to the Committee were as under :—

(*i*) to examine the existing rules generally and to make any recommendations they may think proper for their modification, revision or repeal ;

(*ii*) more particularly to consider the question of the restoration to the original holders of lands forfeited under the rules, the conditions on which such restoration should be made, to what extent, *if any*, such holders have a lien on lands so forfeited, and what interpretation has been placed upon the rules by successive Commissioners in Sind ; and to submit a report to Government.

4. The appointment of the above Committee was announced under Government Press Note No. L. C. 1348-B, dated 24th August 1925.

A preliminary meeting of the Committee was held at Karachi on 2nd October 1925 (under the chairmanship of Mr. Covernton) to determine the general lines of procedure. A questionnaire was drawn up (Appendix A), and a list of witnesses (Appendix B), was agreed upon. The questionnaire was issued on 6th October 1925 and was sent to 27 official and 47 non-official witnesses and to 6 Associations and representative bodies. Of these 23 official and 31 non-official witnesses and 5 Associations replied, and their evidence is embodied in a printed blue book (Appendix C).

On January 20th, 1926, Mr. W. F. Hudson C. I. E., M. L. A. was appointed Chairman in the place of Mr. Percival. The Committee met for the second time on February 18th under the Chairmanship of Mr. Covernton (in the absence of the Chairman at Delhi). At this meeting it was decided to call 21 witnesses to give oral evidence, and to hold all future sittings in Karachi. The Committee sat to record oral evidence from April 6th to 10th, all members being present except Sayed Mahomed Kamil Shah. Thirteen witnesses were examined. The remainder for one reason or another failed to appear and it was not thought necessary to resummon them. The oral evidence is printed in Appendix C.

The Committee met to consider the report from May 3rd to 7th (all members being present) and again from May 14th to 15th. On May 15th the non-official members decided to submit a separate report.

HISTORICAL.

5. The history of the system of fallows in Sind and the origin and object of the present fallow rules are set fourth in the historical note submitted to Government with the Commissioner's Memorandum No. 1895, dated 20th June, 1913, which was incorporated in the revised edition of the Manual of Commissioner's Special Circulars after the receipt of Government Resolution No. 7222, dated 4th August 1913. It will be found at page 80 of the Manual and is reprinted for ready reference as Appendix D.

6. The fallow rules were introduced in 1887 and have been in force (with certain modifications, which will be explained later on in this report) ever since. But it must not be supposed that the present enquiry is the first critical examination to which they have been subjected. On no less than 3 separate occasions they have been the subject of exhaustive examination by the Commissioner in Sind, and it may be of interest at this stage to indicate briefly the course of the discussions and the conclusions arrived at on each occasion.

7. The first discussion took place in 1899, when the acting Commissioner (Mr. R. Giles) consulted all District Officers whether the fallow rules "were productive of any good to Government or the people, and whether they could not be replaced advantageously by some simple rules, such as declaring all lands to be forfeited absolutely to Government if not cultivated once in 10 years." The general view taken by the District Officers was that 10 years would be excessive, though some of them were inclined to favour a limit of 7 years The Commissioner, Mr. (afterwards Sir Evan) James decided that no change in the period prescribed by the rules was at all advisable. He said "Although 13 years have passed since the fallow rules were made, the people in many places have not yet realized fully their object and force. It would be in the Commissioner's opinion impolitic in the highest degree to alter what is now one of the most essential incidents of land tenure in Sind, and one of the wisest measure devised by Mr. Erskine (on the advice of a strong committee of Sind officers) to adjust the Bombay system of settlement to this Province. Even if a change were supposed to tend towards theoretical perfection (and that it would do so the Commissioner does not believe), any change would now perplex and disturb the whole of the land owning classes who are extending cultivation very satisfactorily. Moreover whatever rules may be made on paper, the sense of proprietorship in fallow forfeited lands would still remain, and the ignoring of it would be practically impossible or at least appear an outrage on the cultivator's sense of what is just. The Commissioner will therefore leave well alone."

8. The general question was again raised in 1904, by Mr. (afterwards Sir John) Muir Mackenzie, Commissioner in Sind. In reply to a reference from him, Messrs. Barrow, Cadell, Mackenzie, Baker, Chatfield and Beyts all strongly opposed the abolition of rule 4. Mr. Mules stated that he was not particularly enamoured of the rules, but was not able to suggest any thing better. Mr. Rieu was inclined to believe that necessity of rule 4 in its present form no longer existed, and he endorsed the suggestion of Shaikh Sadik Ali that the period of fallows should coincide with the period of settlement in each taluka. Sirdar Mahomed Yakub while considering that the abolition of rule 4 would lay the revenue system of the Province open to the reproach of being unduly loose, was of opinion that it should not apply in future to lands depending usually on lift for irrigation. So unsuitable did he consider it for lift lands that he advocated the total abolition of the rule rather than a continuance of its operation in all lands including Charkhi.

As a result of the discussion, the rules were left unaltered although Mr. Muir Mackenzie himself was very doubtful as to their necessity.

9. The 3rd and last examination of the general principle involved began in 1909 and extended over a period of nearly 4 years when the results of all the correspondence and of a Conference held in 1911 were summed up by the Commissioner (Mr. Lucas) in a very full report No. 1895, dated 20th June 1913, (printed as appendix E).

In this report the Commissioner defended the existing rules against attacks from two opposite sides. On the one side the Sind Mahomedan Association and the Hon. Mr. Bhurgri demanded the abolition of the rules in the sense that the zamindars should be relieved of the obligation to pay assessment on lands which they left uncultivated. On the other hand the agricultural experts of the Government of India and the Government of Bombay suggested that the time had come when the rules should be abolished in the sense that the assessment should be levied every year on all occupied lands whether cultivated or not, or else the fallow period allowed by the rules should be considerably reduced. The Commissioner pointed out that the rules had been exhaustively examined 3 times in the previous 8 years, twice in correspondence and once in Conference with all the senior officers of the Province, and that there was practical unanimity on each occassion that the retention of the fallow rules, and more especially rule 4, was absolutely necessary and that it was the belief of all revenue officers in Sind that rule 4 had acted as a great stimulus to the cultivation of land. On the other hand Mr. Lucas explained that the case of the agricultural department for abolition of the fallow concession was based on a mistaken assumption and that the maintenance of the rules was not merely a question of agricultural economy, but underlying it were many considerations of a political, fiscal and agricultural character. He suggested that it was premature to consider whether the fallow rules should be altered or abolished in order to suit the possible conditions of perennial irrigation in the future and he pointed out that any reduction in the period on inundation canals would inevitably result in the general relinquishment of all the poorer lands. Finally he urged " that the question of reducing or abolishing the fallow period should be quietly laid to rest until the advent of perennial irrigation in Sind, and that fallow rules which have remained unchallenged for more than 20 years and in the opinion of all Sind Revenue Officers have been completely successful may be left undisturbed." Government in their resolution No. 7222, dated 4th August 1913, concurred in this view.

10. In September 1924, Government sanctioned the suspension of the fallow rules (by which was presumably meant fallow rule 4) in the entire Barrage area, and two months later rule 4 was also provisionally suspended by the Commissioner in Sind in the non-Barrage area in the case of all lands dependent on canals under restriction. The result is that rule 4 has since 1924 only been in operation in 11 dehs of Kotri taluka, 21 dehs of Manjhand (mahal), 12 dehs of Karachi, 7 dehs of Jati, 12 dehs of Shahbunder, 11 dehs of Sujawal, 9 dehs of Kandhkot and in portions of 14 dehs of Sukkur taluka, that is to say, only in 97 dehs out of a total of 5365 dehs in the whole Province.

EXAMINATION OF THE RULES.

[PART (1) OF THE REFERENCE.]

11. Having thus briefly sketched the history of the rules down to the present time, we now pass on to the first point in our reference, *viz.*, a general examination of the existing rules.

GENERAL.

12. A very large majority of the non-official witnesses have advocated a complete abolition of the fallow rules. Presumably they omitted to observe that the repeal of rule 3, would render every survey number, whether cultivated or not, liable to annual assessment under section 45 of the Land Revenue Code as in the rest of the Bombay Presidency. We are unable to make any such recommendation, as we consider that a system of fallows is essential under the present conditions of Sind. Not only is there insufficient water in the inundation canals to provide irrigation for the whole cultivable area under command, but even the Barrage canals are designed to give water to about 80 per cent. of the land under command. In these circumstances fallows are inevitable and it seems unnecessary to discuss the point further.

13. We now proceed to an examination of each rule separately.

RULE 1.

(*i*) The present rule is :—

"1. When the occupancy of a Government survey number appropriated for the purposes of agriculture is granted to any one, the assessment of such number for the first year of occupancy is leviable whether the number is or is not cultivated. The object of this rule is to prevent individuals acquiring land which they cannot or will not utilize and holding it free of all liability to assessment for five years under rules 3 and 4, and also to prevent their reacquiring the land after the expiration of the five years and holding it for another five years free of assessment and so on. Assessment should be levied under this rule on relinquished and fallow forfeited survey numbers regranted to the original occupants or their heirs."

(*ii*) Very few of the witnesses have referred specifically to this rule. Mr. Hotchand (No. 1) suggests that it should be so modified as to allow one year or more to occupants within which to cultivate the land. Mr. Vastiram (No. 14) and Mr. Gurdasing (No. 26) recommend that the rule should be abolished. On the other hand Rai Bahadur Hiranand Khemsing (No. 33) who may be regarded as one of the principal opponents of the existing rules, stated in his oral evidence that he was in favour of the retention of this rule because its provisions were salutary, and that worked with reasonable discretion it was not an unjust rule. Concurring with him, we propose to maintain the rule in principle, but to modify it in such a way as to avoid all possibility of hardship. It not infrequently happens that land is given out too late for cultivation to be undertaken with any prospect of success in that year. Sometimes too the land requires considerable preparation in the way of levelling or jungle clearance. Our recommendation therefore is that the 'nakashto' assessment should ordinarily be levied in the second year instead of in the first, and that the Collector should have discretion to extend the period of recovery to an even later date. As a matter of fact, this discretion has been frequently exercised in the past, but it seems desirable to regularise it by an amendment of the rule.

(*iii*) The proposed rule will be—

"1. When the occupancy of a Government survey number appropriated for the purposes of agriculture is granted to any one, whether permanently or for any period of more than one year, if that number be not cultivated in the first year of occupancy, then the assessment on it shall be leviable for the second year of occupancy, whether the number is or is not cultivated in the second year. Assessment levied under this rule is called nakashto assessment. The object of this rule is to prevent individuals from taking up land which they cannot or will not utilise and holding it free of all liability to assessment for five years under rules 3 and 4. Assessment should be levied under this rule on relinquished and fallow forfeited numbers re-granted to the original occupants or their heirs, in the same way as on nakabuli numbers.

(ii) But the Collector is authorized, if he considers that for special reasons the number cannot be cultivated within the first two years of occupancy to postpone the liability to nakashto assessment to such later years as may appear to him to be necessary.

(iii) In the case of eksali grants the nakashto assessment shall be leviable if the number is not cultivated in the year for which it was granted provided that if the Collector is satisfied that the failure to cultivate is due to causes out of the occupants control he may remit the nakashto assessment on eksali numbers."

RULE 2.

(*i*) The present rule is :—

"2. If in any year an occupied survey number appropriated for the purposes of agriculture is not cultivated but the occupant of such number makes a profit

out of his occupancy by sale of fish, grass, fodder, timber, fuel or other product of such number, the Collector shall at his discretion levy a part or the whole of the assessment on the number.

It sometimes happens that the profit from an agricultural number is greater when the number is not cultivated than when it is cultivated. For instance a flooded number may give the occupant a large profit by the sale of fish and edible acquatic plants. This rule is intended to meet such cases and to prevent an occupant reaping large profits from his occupancy for perhaps four consecutive years without liability to pay the assessment. On the other hand this rule may not be utilized to levy assessment from an occupant who makes a profit from an uncultivated survey number by the sale of earth removed with the *bona fide* intention of improving the land."

(*ii*) This rule also is referred to by very few witnesses, Mr. Hamid A. Ali (No. 13) although he advocates the abolition of all the other rules, considers this one is equitable and should be retained. Mr. Mahomed Sidik Wagan, (No. 37) is also in favour of retention of this rule, though he wishes to abolish all the rest, except rule 3.

(*iii*) We consider that the rule is a sound one and causes no hardship but we suggest the following modifications :—

In line 4 omit ' grass ' and ' fodder.' In any area where grass is grown in considerable quantities there is a special rate, and present rule 5 applies ; in other areas in view of the desirability of increasing the stock of grass-fodder we think no assessment need be taken. The word ' fodder ' should be omitted, as apart from grass and regular fodder crops, we know of none which is worthy of consideration. We also provide a clause to ensure that all payments made during the period are taken into consideration in reckoning the liability to fallow assessment. This seems more equitable than the present rule.

(*iv*) The proposed rule will be :—

" 2. If in any year an occupied survey number appropriated for the purposes of agriculture is not cultivated, but the occupant of such number makes a profit out of his occupancy by the sale of fish, timber, fuel, or other product (except grass) of such number the Collector shall at his discretion levy a part or a whole of the assessment on the number.

Payments under this rule do not exempt a survey number from liability to fallow assessment under rule 4 unless the aggregate of such amounts paid during the fallow period equals the full assessment. If the amounts so paid fall short of the full assessment, the fallow assessment to be charged is the ordinary assessment less the amounts so paid.

It sometimes happens that the profit from an agricultural number is greater when the number is not cultivated than when it is cultivated. For instance, a flooded number may give the occupant a large profit by the sale of fish and edible aquatic plants. This rule is intended to meet such cases and to prevent an occupant reaping large profits from his occupancy for perhaps four consecutive years without liability to pay the assessment. On the other hand this rule may not be utilized to levy assessment from an occupant who makes a profit from an uncultivated survey number by the sale of earth removed with the *bona fide* intention of improving the land."

RULE 3.

(*i*) The present rule is :—

" 3. Subject to the conditions laid down in rules 1 and 2 the assessment on an occupied survey number is payable only for the years when such number is cultivated wholly or in part. Survey numbers otherwise fallow of which the whole

or a portion is used as a nursery for rice seedlings by the occupant are not on this account to be considered cultivated and liable to assessment unless the occupant raises seedlings for sale or sublets his number for the purposes of a nursery."

(*ii*) None of the witnesses suggest any change in this rule, though many of them (inadvisedly as it seems to us) advocate its abolition. To abolish this rule would be to withdraw the concession which differentiates Sind from the rest of the Bombay Presidency and which is really one of the foundations of the Sind Revenue System. We only suggest certain verbal changes in this rule.

(*iii*) The proposed rule will be:—

"3. Subject to the conditions laid down in rules 1, 2, 4 and 5 the assessment on an occupied survey number is payable for only those years in which the number is cultivated wholly or in part. Any survey number otherwise fallow of which the whole or a portion is used as a nursery for rice seedlings by the occupant is not on this account to be considered cultivated and liable to assessment unless the occupant raises seedlings for sale or sublets his number for the purpose of a nursery".

RULE 4.

(*i*) The present rule is:—

"4. (1) If a survey number appropriated for the purposes of agriculture has not paid one full assessment for four consecutive years, either because the number has not been cultivated or because full assessment has not been levied by the Collector under rule 2 during that period, it is liable to assessment for the 5th year, and if the assessment is not paid in due course the number may be forfeited under the provisions of clause (b), section 150 of the Land Revenue Code.

(2) When a number has once been cultivated and assessed a fresh period of fallow begins to run from the year following, even though the assessment may have been remitted in full under the remission rules."

(*ii*) The first sub-section of this rule was a part of the fallow rules of 1887, and its wording has since been but slightly changed. The second subsection was not in the rules as originally sanctioned, but fist appeared as rule 3 of the supplementary rules issued by Mr. Trevor in 1890, and has been modified since to bring it into line with the changed wording of other rules, especially rule 7.

(*iii*) Rule 4 is of course the *crux* of the whole matter and we have had a mass of conflicting evidence presented to us in regard to it. Almost all the non-official witnesses are, not unnaturally, strongly opposed to the continuance of the rule in any shape or form. They say that the original object of the rule has been served, that zamindars no longer need any stimulus to cultivate, and that the rule when it does operate, does harm to the zamindar, and no good to Government. Fallow assessment is described as "an improper penalty" and fallow forfeiture as an unjustifiable interference with the rights of property. For the more extreme presentation of the case attention is invited to the evidence of Rai Bahadur Hiranand (No. 33) and Mir Allah Baksh (No. 50), but most of the rest state practically the same views in rather milder terms. The only exceptions among the non-official witnesses are:—(1) Mr. Dingomal Hukumatrai (No. 34) who does not wish to abolish the rule but thinks the fallow period should be extended to 7 or 10 years, (2) Mr. Sundersing (No. 4) who wishes no change made, and states that there is no alternative to rule 4 to encourage zamindars to work hard, (3) Buxi Darshansing (No. 3) who represents the Jamrao Sikh Association and who after 10 years' personal experience of Sind farming wishes no change in the rules. The evidence of this witness is not without significance. He represents 3,000 Sikh cultivators, and he states in his oral evidence that the opinions set forth in his written statement were duly endorsed at a meeting of his Association. These opinions are entirely in favour of the existing rules.

(*iv*) Amongst the official witnesses Messrs. Taunton (No. 2), Nuruddin (No. 27), Brown (No. 29), Davies (No. 12), Nur Nabi (No. 18) and Gurdasing (No. 26) are in favour of the existing fallow period being maintained. Messrs. Chainrai (No. 5), Punwani (No. 7), Vartak (No. 9), Gul Mahomed (No. 15), Hardasmal (No. 22), Mahomed Baksh (No. 48) and Valabdas (No. 30) wish the rule to be maintained but suggest an extension of the period, Messrs. Baker (No. 11) and Sawhney (No. 31) are in favour of the existing period at present, but suggest a reduction of it in the Barrage area. Messrs. Hotchand (No. 1), Gordon (No. 6), Harrison (No. 47) and Henderson (No. 25) are also in favour of a reduced period under various conditions. It is not, we think, without significance that Mr. Chainrai (No. 5), Mr. Gurdasing (No. 26) and K. B. Gul Mahomed (No. 13), who are zamindars as well as officials and have all either lost land through forfeiture, or been compelled to pay fallow assessment do not advocate the abolition of rule 4.

The only official witnesses who wish the rule to be repealed are Mr. Hamid A. Ali (No. 13) and Mr. Vastiram (No. 14). Mr. Hamid A. Ali says that its usefulness is not in proportion to its unpopularity and real inconvenience and opportunities for corruption to which it gives rise. Mr. Vastiram doubts the legality of the rule and in any case considers the levy of assessment on uncultivated land to be opposed to good policy and contrary to the old usage.

(*v*) We are of opinion that in dealing with this rule a sharp distinction must be drawn between the areas which will be commanded by the Barrage canals, and those which will not. In the former under the orders of Government the operation of this fallow rule is suspended from the year 1924-25. The justification for this decision lies in the fact that the regrant of forfeited numbers and the grant of new land has been suspended in the Barrage area, and it might be considered a hardship that lands should be forfeited for non-payment of fallow assessment when the occupants have no opportunity of getting them back. We do not consider that the orders of Government should be withdrawn, or that there is any necessity to reapply the rule in this area before the introduction of Barrage irrigation even if it should be decided to remove the restriction on the immediate regrant of fallow forfeited numbers in the Barrage area, under certain conditions. If the rule were reapplied, a fresh five years' period would commence to run from that date, and it is understood that Barrage irrigation will probably have commenced in all occupied lands commanded by the Project before that 5 years' period has expired.

(*vi*) A much more important question is whether rule 4 or any thing like it, should be retained in the Barrage area *after* the introduction of Barrage irrigation. This question, however, is one on which we find ourselves unable to offer any definite recommendations at the present stage, since we have not a sufficiently accurate and detailed knowledge of the conditions which will prevail in that area after the Barrage comes into operation. No doubt we should be entitled to assume that there will be an assured and fully controlled supply of water, and therefore no number need remain uncultivated for lack of water at any rate for more than one year in two. We understand that the project provides for the irrigation of only 80 per cent. of the area commanded each year and therefore it is clear that some sort of fallow period will be required. But water is not the only factor, and there may be many others involved which we do not know and cannot foresee. To take one obvious instance, the Agricultural Department is now about to conduct a series of experiments at Sakrand in order to ascertain how far and with what precautions it is possible to cultivate Sind soil under perennial irrigation year by year without danger of either exhaustion or of water-logging. It is impossible to foresee the result of those experiments or to anticipate the conclusions which may be based on them. So far as we can judge, it does indeed seem probable that even more than on an inundation canal some provision will be required to ensure that occupied land should not remain uncultivated for indefinite periods without paying any revenue whatever to Government. But we consider that it would be worse than useless to lay down rules now with no other guide than our experience of inundation canals, and a few canals such as the Jamrao which were once quasi-perennial, but are so no longer. We consider

therefore that the question of the application of rule 4 to lands irrigated from the Barrage should be dealt with by a Committee which should enquire into the matter after the Barrage has been constructed and the Barrage canals have been working for a year or two.

(*vii*) There remains the question of the areas which will not be commanded by the Barrage canals. These include the whole of the Karachi district, about half of Hyderabad, and large portions of Sukkur and the Upper Sind Frontier. In a considerable portion of this area the rule has already been suspended on account of restriction on the canals and at the moment the number of dehs in which the rule is in active force is only 97 out of a total of over 5,000.

It has been urged that since the rule is being actually applied in so small a fraction of the total number of dehs in Sind, or even of the non-Barrage dehs, there can be little practical object in its retention. This argument seems to us to have little force. The rule has been suspended wherever it appears that failure to cultivate is due to general causes outside the zamindars' control, or where for any other reason its enforcement appeared unfair to the zamindar. But even if it were suspended in 99 per cent. of the whole of Sind, this could be no sound argument for its suspension in the remainder, in which no reasons for suspension existed. Moreover there is no reason to assume that the water-supply in dehs where the rule is now suspended will never improve. On the contrary there seems every ground to expect that in some dehs at least, alterations to existing canals, the construction of new canals, and improved arrangements for the control and distribution of water may improve the supply sufficiently to warrant the removal of the restriction and the reapplication of rule 4.

Although a few witnesses have said that there is land in Sind which cannot be cultivated even once in ten years, it seems abundantly clear from the evidence, read as a whole, that *given a sufficient water-supply*, even lift land, provided it be cultivable at all, can be profitably cultivated without manure at least once in five years and flow lands at shorter intervals. If this is so, it is surely no hardship to require that a zamindar should cultivate his land, provided water is available, at least once in five years, or should at any rate pay the assessment once in that period.

Varying replies have been given to the question why lands in fact remain fallow for prolonged periods. But the reasons assigned may all be reduced to three main classes: (1) lack of water, (2) lack of haris and (3) personal and individual reasons connected with the khatedar himself, *e.g.*, lack of capital, preoccupation with other work, lack of interest in some lands as compared with others, incompetent or lazy agents or 'kamdars' (where the zamindar is an absentee), and sometimes lack of energy or capacity on the part of the zamindar himself. Even cases apparently falling into the second class, would probably be found in most cases in reality to fall under either the first or the 3rd class. Now it is generally admitted that by far the commonest cause of land remaining uncultivated is lack of water and this is in most cases a cause outside the zamindar's control But though instances of the 3rd class may be rare in proportion to the total number of zamindars who are fallow assessed, yet they certainly exist, nor are they so uncommon that they can be ignored. So long as human nature remains what it is, so long will some landowners be less competent and less energetic, and less interested in their lands than others. And so long as grants of land are made, it must happen that sometimes zamindars take up land which they cannot cultivate, or that they neglect some of their older land in order to cultivate the new land. The problem is how to ensure that Government gets its assessment at reasonable intervals where cultivation is not impossible, without exacting it from lands which could not possibly be cultivated for lack of water. Rules 4, 7 and 8 were devised to solve this problem, and must be taken together. Provided rules 7 and 8 are worked with reasonable latitude they seem to us to provide the best solution that can be found. Certainly the abolition of rule 4 is no solution, for it ignores one side of the problem, as completely as rule 4 would ignore the other, were it not

accompanied by rules 7 and 8. Where there is general failure of water throughout any well defined area, the obvious solution is to suspend rule 4 either for one or more years as may in the circumstances be necessary. Where failure to cultivate is due to special causes peculiar to a particular survey number, postponement of the liability to fallow assessment till the following year can be given on application. A genuine shortage of haris in any particular area which the zamindars cannot meet by offering better terms to their haris would afford a good ground for suspension under rule 8.

Applications for postponement of liability to fallow assessment do not seem to have been made very frequently in the past in some talukas, and we are elsewhere proposing certain modifications of rule 7 with a view to facilitating such applications and to reduce the chances of an application being refused on merely technical grounds.

It may be admitted that the figures of fallow assessment and fallow forfeitures (Appendix F), in certain areas suggest a doubt whether rule 8 has always been applied in the past quite as freely as was desirable, although Appendix G shows that its application has in fact been frequent and widespread. We are not able to suggest any modification either of rule 4 or rule 8 which would have the effect of preventing particular areas from being overlooked. But perhaps this end would be met by executive orders that Mukhtiarkars should each year supply the Collector with a statement of the area in each deh coming under the fallow assessment, with an explanation of the reason, if the area is very large, and that they should at the same time give their opinion whether there is any case for suspension under rule 8.

(*viii*) We have considered the question whether it was desirable to make any distinction between flow and lift in regard to the length of the free fallow period. When the non-official witnesses complained of the five year period being too short, they usually seem to have been referring to lift lands. On the other hand some of the officials have suggested that for flow lands a shorter period would be reasonable, and even that if this distinction were made there would be no objection to an increase in the lift period. Under the fallow rules in force under the revision settlements different periods of fallow were fixed for different classes, *i. e.*, for kharif flow, kharif lift, rice, etc. But it was found in practice that those rules were far too complicated. Under an irrigation settlement on an inundation canal such a varying scale of fallows would be still more difficult to work. A number no longer has a definite survey classification as lift or flow. Some lands which are usually lift may in an exceptional year become flow, and *vice versa*. Therefore such a scale would be very difficult to apply in individual cases. Again it would make it far more difficult for the average khatedar to know when his number becomes liable to fallow assessment. Finally, as has been said above, we do not consider that any case has been made out for holding the five year period insufficient for lift, provided the water-supply is sufficient. Where it is insufficient the case can best be met with by suspension. We are therefore unable to recommend that any distinction of period be made in the Non-Barrage area between lift and flow.

(*ix*) We propose certain slight changes in the rule, consequent on the modification in rules 2, 5 and 10 which are explained in our remarks under those rules: but the general effect remains unaltered.

The new rule will be :—

"4 (1) If a survey number appropriated for the purposes of agriculture has not paid one full assessment for four consecutive years either because the number has not been cultivated or because full assessment has not been paid under rules 2 and 5 it is liable to assessment for the fifth year and if the assessment is not paid in due course it becomes an arrear of land revenue and may be recovered in the manner prescribed in rule 10.

(2) When a number has once been cultivated and assessed, a fresh period of fallow begins to run from the year following, even though the assessment may have been remitted in full under the remission rules."

RULE 5.

(*i*) The present rule is:—

"5. Wherever a special light rate exists for grass the levy of that rate in any year does not exempt a survey number from forfeiture under rule 4 unless the occupant has paid the grass rate for each year during the fallow period. But if the grass rate is paid in the year in which the survey number becomes liable to fallow assessment, the fallow assessment to be charged is the ordinary fallow assessment less the amount charged as grass rate. Where no special light grass rate exists, the payment of such part of the assessment as the Collector may order at his discretion under rule 2 should not be considered as exempting a survey number from forfeiture, even though grass may have been grown and part assessment levied several times during the fallow period. The levy of full assessment in any year will of course entitle the number to a fresh period of fallow from the next year".

(*ii*) No witness has made any special mention of this rule. We suggest that all payments for grass during the fallow period should be taken into consideration in assessing the liablity to fallow assessment, on the same lines as the change suggested in present rule 2 (above). The last part of the present rule also disappears in view of the explanation of present rule 2 (above).

(*iii*) The proposed rule will be:—

"5. Wherever a special light rate exists for grass, the levy of that rate in any year does not exempt a survey number from liability to fallow assessment under rule 4 unless the aggregate of such amounts paid during the fallow period equals the full assessment. If the amounts so paid fall short of the full assessment the fallow assessment to be charged is ordinary assessment less the amounts so paid".

RULE 6.

The present rule is:—

"6. When assessment is leviable under rule 4 on a survey number held under an Irrigational Settlement, the assessment to be levied is that chargeable on the description of cultivation last undertaken in that survey number. If it has never been cultivated before, the assessment to be levied is that which was adopted as the basis for fixing malkano at the time when occupancy of the land was granted. In cases, however, where land was granted free of malkano or at a fixed rate per acre as in the Jamrao tract the assessment should be charged at the lowest kharif rate for the deh." No change is proposed by any one, and we consider that the rule may stand.

RULE 7 (i).

(*i*) The present rule is:—

"7 (i) In the case of survey numbers liable to fallow assessment, if there are circumstances which render it impossible to cultivate the survey number during the kharif and rabi (including adhawa) seasons in the fifth year, liability to fallow assessment may be postponed under the orders of the Collector to the following year".

(*ii*) This rule has undergone several important changes since the principle which it embodies was first laid down in 1890. In that year the Commissioner in Sind Mr. (afterwards Sir Arther) Trevor issued certain supplementary fallow rules, in his Circular No. 2232, dated 2nd July. The relevant rule ran as follows:—

"These rules do not however apply to uncultivated numbers liable to assessment under rule 4 of the fallow rules, the assessment on which must ordinarily be levied in full or the number forfeited as therein provided. The single case in which an exception may be made and remission allowed is, when it can be shown that owing either to want of water or other causes beyond the control of the occupant it was not possible to cultivate the number in any one of the years, including the fifth, during which it has remained fallow".

As a result of practical experience, it was found very difficult, if not impossible, to ascertain whether a particular number could or could not have been cultivated in each one of the five years, and Mr. James accordingly in 1900 amended the rule by substituting for the words "in any one of the years including the fifth" the following words "in the fifth year".

In 1923 it was pointed out that there was no sound reason why a fresh period of fallow should begin to run merely because cultivation was impossible in the fifth year of the previous period, and that the more logical method would be to grant postponement of liability to assessment in the fifth year if cultivation were impossible. The Commissioner (Mr. Mountford) accepted this view which was supported by all the district officers, and the rule was amended accordingly.

(*iii*) Most of the non-official witnesses desire a reversion to the old rule, while most of the officials consider the change is an improvement. Mr. Hamid A. Ali, who is certainly not enamoured of the fallow rules, says that there is no reason to give a five years' postponement in consequence of circumstances which affect one year only. We concur in this view and recommend that the rule be allowed to stand, but in order to avoid the possibility of any ambiguity as to its intention, we propose to add the words "and year by year, if necessary".

(*iv*) The proposed rule will be:—

"7. (1) In the case of survey numbers liable to fallow assessment if there are circumstances which render it impossible to cultivate the survey number during the kharif and rabi (including adhawa) seasons in the fifth year, liability to fallow assessment may be postponed under the orders of the Collector to the following year, and year by year, if necessary".

RULE 7 (ii) TO (ix).

(*i*) The present rule is:—

"(ii) Applications for postponement of liability to fallow assessment on lands whether on inundation or perennial canals, should be submitted to the Mukhtiarkar by the 31st January. But in tracts served by perennial canals where adhawa cultivation is ordinarily carried on Sub-divisional Officer may, in special cases, allow applications to be accepted up to 31st March. Such applications are exempt from court-fee stamp under Government of India notification No. 4385-S. R., dated the 19th August 1901.

(iii) Applications received after the prescribed date will not be inquired into except under the orders of the Sub-divisional Officer.

(iv) Every application received must be at once entered in a register to be kept in the appended Form A, unless it omits to specify the survey numbers on which postponement of liability is claimed, in which case the Mukhtiarkar shall immediately inform the applicant why it has not been registered. Such applications may, however, be entered the register subsequently if the Sub-divisional Officer so directs. The Mukhtiarkar may permit an applicant to correct any obvious error in entering the number of the survey numbers for which postponement is applied for.

(v) In the case of floods due to a breach in a canal or of insufficiency of water the Sub-divisional Officer should obtain from the Executive Engineer his opinion on the working of the canal concerned.

(vi) The Mukhtiarkar should commence the inspection of lands as soon as possible after receipt of the applications. He should at once note the result of his inspection in the prescribed form, which should be signed and issued to the applicant on the spot. Amins are not required in dealing with these claims.

(vii) An applicant may appeal to the Sub-divisional Officer against the Mukhtiarkar's refusal to recommend postponement within fifteen days of the date of receipt of the order, attaching to his petition the form issued to him. No second appeal lies to the Collector.

(viii) The Mukhtiarkar should record the result of his inspection below the application, giving details of the area, assessment, source of irrigation and reasons for recommending postponement of liability in respect of each survey number separately.

(ix) The Mukhtiarkar, after completing his enquiries, should draw up a statement in the attached Form B and submit it by 15th May to the Sub-divisional Officer, who, after personal enquiries in as many cases as possible should submit it with his recommendation against each entry to the Collector for sanction before 1st July."

(*ii*) The only changes we propose are (a) in sub-section (ii) the substitution of 'March 31st' for 'January 31st' in all cases. We do not think this change will involve any administrative difficulty, while it will remove any possibility of hardship to the cultivator, (b) in sub-section (iv) instead of "the Mukhtiarkar may permit an applicant" substitute "the Mukhtiarkar shall permit an applicant".

RULE 8.

(*i*) The present rule is :—

"8. In addition to the postponement of liability to the fallow assessment under No. 7 above, the Commissioner is prepared to authorize the suspension of the fallow rules in any well defined tract where it can be shown that there is a chronic deficiency of water-supply or that owing to other circumstances beyond the control of the land holders cultivation is impeded. Before submitting proposals for suspension, district officers should ordinarily consult the Public Works Department Officers, even when it is proposed to suspend the rules for one year only".

(*ii*) The only change we suggest in this rule is that for the words "the Commissioner is prepared to authorize the suspension of the fallow rules" be substituted "the Commissioner may authorize the suspension of rules 1 and 4".

RULE 9.

We propose no change in this rule.

RULE 10.

(*i*) The present rule is :—

"10. Dehwar lists prepared by the Tapedar of survey numbers liable to fallow assessment must be prepared in time for scrutiny by the Mukhtiarkar and for examination by the officer doing the jamabandi. The assessment on such numbers should ordinarily be paid by 10th June, default in payment rendering the numbers liable to forfeiture. By the 15th June, the Tapedars should send the list to the Mukhtiarkar, noting the survey numbers on which the assessment has been paid, with as many copies of the proclamations and notices prepared in the form appended as there are defaulters, together with three spare copies to be affixed, one in the Tapedar's dera, one in the Mukhtiarkar's or Mahalkari's office and one in the Collector's office. The Mukhtiarkar should sign the notices and have them published by the 20th June in the manner shown in section 166 of the Land Revenue Code. Under clause (b) of the proviso to section 153 of the Land Revenue Code an occupancy cannot be declared forfeited until after the expiration of at least fifteen days from the latest date on which any of the notices was affixed; it is therefore incumbent on the Mukhtiarkar to ascertain the date on which the notices were so affixed on the Tapedar's dera and in the Collector's office. The dehwar lists of survey numbers prepered by Tapedars should then be revised in the Mukhtiarkar's office the numbers on which the assessment has been paid or postponed being omitted. The Mukhtiarkar should submit the revised lists to the Sub-divisional Officer by the 10th July, reporting at the same time the latest date on which any of the notices was affixed. The Sub-divisional Officer, not earlier than fifteen days after that date, should declare the survey numbers to be

forfeited and communicate his order to the Mukhtiarkar together with sanction to the writing off of the assessment due on the forfeited numbers. This order and sanction should ordinarily be in the hands of the Mukhtiarkar by the 20th July and should in no circumstances be delayed beyond the 25th July. Any occupant wishing to pay assessment on any survey numbers notified for forfeiture before the end of the year may of course do so; on receipt of intimation of such payment from the Tapedar, the Mukhtiarkar will strike the numbers off the list and communicate the fact to the Assistant Collector."

(*ii*) It will be seen that the general effect of this rule is to apply to the recovery of arrears of fallow assessment the general procedure laid down in sections 153 and 166 of the Land Revenue Code. It has been represented to us however that the method of publication prescribed in section 166, Land Revenue Code, does not always in practice give the defaulter sufficient notice. He may not see the notice affixed in the Collector's office, the taluka office or the village. And his nominal residence in the deh may be one which in fact he seldom visits. Even if he sees the notice attached to his house he may not realise what it means, especially as the form prescribed is a general notice for the whole deh including all the survey numbers fallow assessed on which the fallow assessment has not been paid. It is possible that some zamindars at least would prefer to pay, rather than let their lands be fallow assessed, if they received a more definite and individual warning that the amount was due from them.

(*iii*) We propose that the rule should he redrafted as under:—

"10. Dehwar lists prepared by the Tapedar of survey numbers liable to fallow assessment must be prepared in time for scrutiny by the Mukhtiarkar and for examination by the officer doing the Jamabandi. The assessment on such numbers shall be due during the 1st Rabi instalment period. If the assessment is not paid by the prescribed date, notice of demand should issue under section 152, Land Revenue Code, and if it is not paid within the time specified in the notice, the land in respect of which the arrears are due shall be liable to forfeiture under section 153 Land Revenue Code. By the 25th June the Tapedars should send the list to the Mukhtiarkar noting the survey numbers on which the assessment has been paid, with as many copies of the proclamations and notices prepared in the form appended as there are defaulters, together with three spare copies to be affixed, one in the Tapedar's dera, one in the Mukhtiarkar's or Mahalkari's office and one in the Collector's office. The Mukhtiarkar should sign the notices and have them published by the 30th June in the manner shown in section 166 of the Land Revenue Code. Under clause (b) of the proviso to section 153 of the Land Revenue Code an occupancy cannot to declared forfeited until after the expiration of at least fifteen days from the latest date on which any of the notices was affixed; it is therefore incumbent on the Mukhtiarkar to ascertain the date on which the notices were so affixed on the Tapedar's dera and in the Collector's office. The dehwar lists of survey numbers prepared by Tapedars should then be revised in the Mukhtiarkar's office, the numbers on which the assessment has been paid or postponed being omitted. The Mukhtiarkar should submit the revised lists to the Sub-divisional Officer by the 15th of July, reporting at the same time the latest date on which any of the notices was affixed. The Sub-divisional Officer not earlier than fifteen days after that date, should declare the survey numbers to be forfeited and communicate his order to the Mukhtiarkar together with sanction to the writing off of the assessment due on forfeited numbers. This order and sanction should ordinarily be in the hands of the Mukhtiarkar by the 25th July. Any occupant wishing to pay assessment on any survey numbers notified for forfeiture before the end of the year may of course do so; on receipt of intimation of such payment from the Tapedar the Mukhtiarkar will strike the numbers off the list and communicate the fact to the Assistant Collector."

(*iv*) The principal effect of the change is that if the fallow assessment is not paid on the due date, a notice under section 152 will be issued in the first instance, and be served on each individual defaulter. And since the notice fee is to be

recovered from him it is certain that this notice will be served. This will give him a clear warning that the fallow assessment is due and is in arrears. If he still does not pay, then the authorities will have recourse to the procedure laid down in Land Revenue Code, sections 153 and 166. It is neither necessary nor desirable that any of the other methods of recovery laid down in section 150 should be applied to arrears of fallow assessment. In order to make this clear we suggest that the wording of the prescribed form of notice under section 152, Land Revenue Code, should be altered so as to read that the demand is made for payment of fallow assessment and that in case of default proceedings for forfeiting the holding under section 153, Land Revenue Code, only will be taken.

RULE 11.

We propose no change in this rule.

RULE 12.

We propose no change in this rule.

14. Lastly we propose to rearrange the rules in what appears to us to be a more logical order. The present rule 3 embodies the main principle which differentiates the Sind system from the Presidency system, and the main exception to the provisions of the Land Revenue Code: all the other rules are subsidiary to it. It therefore seems desirable that rule 3 should come first, and we have made the necessary rearrangement, old rule 1 becoming new rule 2 and old rule 2 becoming new rule 3. We place old rule 5 next to old rule 2 because both deal with cases where some profit accrues without actual cultivation. Old rule 4 then becomes new rule 5 and the remainder are unchanged.

15. If our recommendations are accepted the rules will in future run as follows :—

FALLOW RULES.

The origin and object of the present fallow rules are shown in the historical note hereto appended. The rules are applicable only to unalienated land, irrigated by a canal or a well, to which a survey settlement has been applied. They have no application to alienated land, nor to unsurveyed unalienated land, nor to any lands lying between the river and the nearest protective bund, nor, save under special orders, to barani lands. Nor do they, with the exception of rule 3 apply to land held under the Sind Occupants' Act III of 1899.

1. Subject to the conditions laid down in rules 2, 3, 4 and 5 the assessment on an occupied survey number is payable for only those years in which such number is cultivated wholly or in part. Any survey number otherwise fallow of which the whole or a portion is used as a nursery for rice seedlings by the occupant is not on this account to be considered cultivated and liable to assessment unless the occupant raises seedlings for sale or sublets his number for the purposes of a nursery.

2. (i) When the occupancy of a Government survey number appropriated for the purposes of agriculture is granted to any one, whether permanently or for any period of more than one year, if the number be not cultivated in the first year of occupancy, then the assessment on it shall be leviable for the second year of occupancy, whether the number is or is not cultivated in the second year. Assessment levied under this rule is called ' nakashto ' assessment. The object of this rule is to prevent individuals from taking up land which they cannot or will not utilise and holding it free of all liability to assessment for five years under rules (1 and 5). Assessment should be levied under this rule on relinquished and fallow forfeited numbers regranted to the original occupants or their heirs in the same way as on nakabuli numbers.

(ii) But the Collector is authorized if he considers that for special reasons the number cannot be cultivated within the first two years of occupancy, to postpone the liability to nakashto assessment to such later years as may appear to him to be necessary.

(iii) In the case of eksali grants the nakashto assessments shall be leviable if the number is not cultivated in the year for which it was granted. Provided that if the Collector is satisfied that the failure to cultivate is due to causes out of the occupant's control he may remit the nakashto assessment on eksali numbers.

3. If in any year an occupied survey number appropriated for the purposes of agriculture is not cultivated, but the occupant of such number makes a profit out of his occupancy by the sale of fish, timber, fuel, or other product (except grass) of such number the Collector shall at his discretion levy a part or a whole of the assessment on the number.

Payments under this rule do not exempt a survey number from liability to fallow assessment under rule 5 unless the aggregate of such amounts paid during the fallow period equals the full assessment. If the amounts so paid fall short of the full assessment, the fallow assessment to be charged is the ordinary assessment less the amounts so paid.

It sometimes happens that the profit from an agricultural number is greater when the number is not cultivated than when it is cultivated. For instance, a flooded number may give the occupant a large profit by the sale of fish and edible aquatic plants. This rule is intended to meet such cases and to prevent an occupant reaping large profits from his occupancy, for perhaps four conscutive years without liability to pay the assessment. On the other hand this rule may not be utilized to levy assessment from an occupant who makes a profit from an uncultivated survey number by the sale of earth removed with the *bona fide* intention of improving the land.

4. Wherever a special light rate exists for grass, the levy of that rate in any year does not exempt a survey number from liability to fallow assessment under rule 5 unless the aggregate of such amounts paid during the fallow period equals the full assessment. If the amounts so paid fall short of the full assessment, the fallow assessment to be charged is the ordinary assessment less the amounts so paid.

5. (1) If a survey number appropriated for the purposes of agriculture has not paid one full assessment for four consecutive years either because the number has not been cultivated or because full assessment has not been paid under rules 3 and 4 it is liable to assessment for the fifth year and if the assessment is not paid in due course it becomes an arrear of land revenue and may be recovered in the manner prescribed in rule 10.

(2) When a number has once been cultivated and assessed, a fresh period of fallow begins to run from the year following even though the assessment may have been remitted in full under the remission rules.

6. When assessment is leviable under rule 5 on a survey number held under an irrigational settlement, the assessment to be levied is that chargeable on the description of cultivation last undertaken in that survey number. If it has never been cultivated before, the assessment to be levied is that which was adopted as the basis for fixing malkano at the time when occupancy of the land was granted. In cases however, where land was granted free of malkano or at a fixed rate, per acre as in the Jamrao Tract the assessment should be charged at the lowest kharif rate for the deh.

7. (i) In the case of survey numbers liable to fallow assessment, if there are circumstances which render it impossible to cultivate the survey number during the kharif and rabi (including adhava) seasons in the fifth year, liability to fallow assessment may be postponed under the orders of the Collector to the following year and year by year, if necessary.

(ii) Applications for postponement of liability to fallow assessment on lands, whether on inundation or on perennial canals, should be submitted to the Mukhtiarkar by the 31st March. Such applications are exempt from court-fee stamp under Government of India notification No. 4385-S. R., dated the 19th August 1901.

(iii) Applications received after the prescribed dates will not be enquired into except under the orders of the Sub-divisional Officer.

(iv) Every application received must be at once entered in a register to be kept in the appended Form A, unless it omits to specify the survey numbers on which postponement of liability is claimed, in which case the Mukhtiarkar shall immediately inform the applicant why it has not been registered. Such application may, however, be entered in the register subsequently if the Sub-Divisional Officer so directs. The Mukhtiarkar shall permit an applicant to correct any obvious error in entering the number of the survey numbers for which postponement is applied for.

(v) In the case of floods due to a breach in a canal or of insufficiency of water, the Sub-Divisional Officer should obtain from the Executive Engineer his opinion on the working of the canal concerned.

(vi) The Mukhtiarkar should commence the inspection of lands as soon as possible after receipt of the applications. He should at once note the result of his inspection in the prescribed form, which should be signed and issued to the applicant on the spot. Amins are not required in dealing with these claims.

(vii) An applicant may appeal to the Sub-Divisional Officer against the Mukhtiarkar's refusal to recommend postponement within fifteen days of the date of receipt of the order, attaching to his petition the form issued to him. No second appeal lies to the Collector.

(viii) The Mukhtiarkar should record the result of his inspection below the application, giving details of the area, assessment, source of irrigation and reason for recommending postponement of liability in respect of each survey number separately.

(ix) The Mukhtiarkar after completing his enquiries should draw up a statement in the attached Form B and submit it by 15th May to the Sub-Divisional Officer, who, after personal enquiries in as many cases as possible, should submit it with his recommendation against each entry to the Collector for sanction before 1st July.

(8). In addition to the postponement of liability to the fallow assessment under No. 7 above, the Commissioner may authorize the suspension of fallow rules 2 and 5 in any well defined tract where it can be shown that there is a general deficiency of water-supply of that owing to other circumstances beyond the control of the land-holders cultivation is impeded. Before submitting proposals for suspension, District Officers should ordinarily consult the Public Works Department Officers, even when it is proposed to suspend the rules for one year only.

(9). Nothing in rule 5 (*i*) of the Fallow Rules shall be held to debar a number, which, having paid no assessment for four consecutive years, is cultivated in the fifth year, from participating in any general remissions to which the occupant may be otherwise entitled under the ordinary remission rules.

(10). Dehwar lists prepared by the Tapedar of survey numbers liable to fallow assessment must be prepared in time for scrutiny by the Mukhtiarkar and for examination by the officer doing the Jamabandi. The assessment on such numbers shall be due during the 1st Rabi instalment period. If the assessment is not paid by the prescribed date, notice of demand should issue under section 152, Land Revenue Code, and if it is not paid within the time specified in the notice the land in respect of which the arrears are due shall be liable to forfeiture under section 153, Land Revenue Code. By the 25th June the Tapedars should send the list to the Mukhtiarkar noting the survey numbers on which the assessment has been paid, with as many copies of the proclamations and notices prepared in the form appended as there, are defaulters together with three spare copies to be affixed one in the Tapedar's dera, one in the Mukhtiarkar's or Mahalkari's office and one in the Collector's office. The Mukhtiarkar should sign the notices and have them published by the 30th June in the manner shown in section 166 of the Land Revenue Code. Under clause (*b*) of the proviso to section 153 of the Land Revenue Code an occupancy cannot be declared forfeited until after the expiration of at least fifteen days from the latest date on which any of the notices

was affixed; it is therefore incumbent on the Mukhtiarkar to ascertain the date on which the notices were so affixed on the Tapedar's dera and in the Collector's office. The dehwar lists of survey numbers prepared by Tapedars should then be revised in the Mukhtiarkar's office, the numbers on which the assessment has been paid or postponed being omitted. The Mukhtiarkar should submit the revised lists to the Sub-Divisional Officer by the 15th of July, reporting at the same time the latest date on which any of the notices was affixed. The Sub-Divisional Officer, not earlier than fifteen days after that date, should declare the the survey numbers to be forfeited and communicate his order to the Mukhtiarkar together with sanction to the writing off of the assessment due on forfeited numbers. This order and sanction should ordinarily be in the hands of the Mukhtiarkar by the 25th July. Any occupant wishing to pay assessment on any survey numbers notified for forfeiture before the end of the year may of course do so; on receipt of intimation of such payment from the Tapedar, the Mukhtiarkar will strike the numbers off the list and communicate the fact to the Assistant Collector.

(11) When Nakashto or conditional assessment charged under rule 2 on lands taken up from Government is neither paid nor postponed under the order of the Collector, it should be remitted and written off and the survey numbers concerned forfeited under the same procedure as is laid down in rule 10 above for time expired fallow numbers.

(12.) The Manager, Incumbered Estates in Sind, is authorized to grant postponement of recovery of the fallow assessment due on survey numbers comprised in estates under his management.

RESTORATION AND LIEN.

(PART II OF THE REFERENCE).

16. We now pass on to the second part of our reference, *i.e.* "more particularly to consider the question of the restoration to the original holders of lands forfeited under the rules, the conditions on which such restoration should be made, to what extent, *if any*, such holders have a lien on lands so forfeited, and what interpretation has been placed upon the rules by successive Commissioners in Sind".

As the question of restoration must depend to some extent, if not altogether, on the question of lien, we propose to discuss that point first.

17. It will be observed that in the questionnaire question No. 17 runs as follows:—

> "Do you consider that in Sind the Zamindar or Government is the owner of the soil?".

This question was formulated by our non-official colleagues, apparently in order to challenge the legality of the application of the Land Revenue Code to Sind. The answer given by Rai Bahadur Hiranand (No. 33) represents the extreme view on this point. He says "Government was not and is not the owner of soil in Sind. It is Zamindar who is the owner. The Government of Bombay at the time that Sind was annexed to Bombay committed an act of spoliation when they constituted themselves as owners and reduced the Sind zamindar to the level of the Deccan ryot, and styled him in the language of the Bombay Land Revenue Code as 'occupant' which is defined as 'holder in actual possession'. The connection of Sind with Bombay has been and will remain an unfortunate one, until this wrong has been righted". In other words Rai Bahadur Hiranand and some other non-official witnesses (*e.g.*, No. 35 Mr. Khilnani) maintain that the Zamindars of Sind had and have proprietary as opposed to occupancy rights in all lands that are on their khata. Our non-official colleagues wished a full discussion of this question to be included in the report, but the Chairman ruled it out of order, as the Committee had not been asked by Government to discuss the legality of the Land Revenue Code. The question referred to this Committee is not whether Government are owners of the land, or whether they have a right

to forfeit land for non-payment of arrears under section 150 (*b*) of the Land Revenue Code, but whether the original holders have any lien on such lands after forfeiture.

18. The legal position appears to us to be perfectly clear. Neither in the Land Revenue Code, nor in the Fallow Rules, is there any mention either of a lien or of a right to restoration. Nor during the forty years that have elapsed since the rules were framed has any attempt ever been made in the Courts either to dispute the right of Government to forfeit lands for non-payment of assessment, or to establish a right to restoration. Seeing that at least 6½ lakhs of acres have been forfeited in the last twenty years and that there are now nearly 4 lakhs of acres under forfeiture in the Barrage area alone, it seems to us inconceivable that some one should not have tested the legal position in the Courts if there were even the faintest doubt about it. The explanation given by Rai Bahadur Hiranand (No. 33) that the Sindhi zamindar is too timid to file a suit against Government in a court is hardly adequate, in the light of the history of the last twenty years. The only adequate explanation is that the zamindars have no strictly legal claim and know it. But at any rate the evidence shows clearly that they all firmly believe that they have a moral claim and think that in equity, if not in law, they are entitled to a restoration of their forfeited fallows.

19. We now have to consider what is the justification for this belief and whether successive Commissioners in Sind have or have not encouraged it by their official utterances As has been said above, there is no question of any difference in the interpretation of the Fallow Rules, since they are not in any way concerned with restoration, the difference, if it exists in fact, is to be found in the system of land grants, as laid down by Commissioners from time to time in their official orders and circulars.

20. We quote below in chronological order the various instructions and decisions which bear on the question :—

Mr. (afterwards Sir) Evan James.—

Paragraph 6 of Special Circular No. 67, dated 21st December 1891.—"The refusal of even fallow lands forfeited for non-payment at the end of fallow term should be granted to the old holders first, unless there be any special objection. Mr. Erskine intended this. The disposal of fallow lands is like the disposal of other waste, a matter entirely for the Collector's judgment. He can sell it by auction, give it back to the old owner (*a*) for a fixed price (if there has been any wilful neglect) or (*b*) on payment of the revenue for which the number was forfeited (and in most cases this will be the rule), or give it back for nothing."

Paragraph 14 of Special Circular 79, dated 7th August 1893, on "Malkana and Land Grants".—"Forfeited fallows should ordinarily be given back to the original owner on payment of malkano equal to one year's assessment, but they may be given to the original occupant free of malkano, if the Assistant Collector is of opinion that they have remained uncultivated without any fault or negligence on the part of the former occupant. If another person applies for forfeited fallows, they should first be offered to the original occupant on payment of arrears as above laid down."

Paragraph 7 of Special Circular No. 87, dated 24th March 1900.—"Suggestions have also been made that the fallow period should be extended from 5 to 7 or even 10 years, with a forfeiture of any lien on the land, such as exists at present. But the Commissioner does not consider any change in the period prescribed by the present rules at all advisable, and is not prepared to recommend to Government to alter the existing system. Although 13 years have passed since the Fallow Rules were made, the people in many places have not yet realised fully their object and force. It would be, in the Commissioner's opinion, impolitic in the highest degree to alter what is now one of the most essential incidents of land tenure in Sind, and one of the wisest measures devised by Mr. Erskine (on the advice of a strong committee of Sind officers) to adjust the Bombay system of settlement to this Province.

Even if a change were supposed to tend towards theoretical perfection (and that it would do so the Commissioner does not believe) any change now would perplex and disturb the whole of the land owning classes, who are extending cultivation very satisfactorily. Moreover whatever rules may be made on paper, the sense of proprietorship in fallow forfeited lands would still remain, and the ignoring of it would be practically impossible, or at least appear an outrage on the cultivator's sense of what is just. The Commissioner will, therefore, leave well alone.'

Mr. R. Giles—

Memorandum No. 533, dated 21st February 1902, to the Collector of Hyderabad.

"The Commissioner thinks he sufficiently indicated his view that no actual ownership vests in the *ex*-khatedar of a forfeited fallow number, by confirming a substantial fine in the case of Mir Aval Shah. None the less the prescriptive right of the *ex*-khatedar to the restoration of such numbers (with the trees, if any, standing thereon), should ordinarily be recognized whether the relinquisher applies for the restoration or not, and taken into consideration when an application is made for their restoration.

Forfeited fallow numbers are rather to be regarded as lands held in deposit pending the payment of the arrears of land revenue due from them than as lands finally forfeited to Government. As the Commissioner has frequently explained to Government in the Land Revenue Reports, the forfeitures are more nominal than real.

In order to avoid misunderstanding the Commissioner may add that notwithstanding the prescriptive right referred to above, the *ex*-khatedar has no indefeasible legal right to the regrant of a forfeited fallow number, and where there are special reasons against such a request, *e.g.* vicinity to a village, the requirements of the Forest or any other Department or when a number has been left on the forfeited list so long that it may practically be said to have been abandoned &c., the Collector is perfectly competent to refuse the regrant. But these are exceptional cases, and ordinarily an *ex*-khatedar should be regarded as having a vested interest in his forfeited fallow numbers and should be treated accordingly."

Mr. Barrow—

Memorandum No. 1568, dated 20th May 1915, to all Collectors.

"Fallow forfeited survey numbers are the absolute property of Government as much as any other unoccupied land and the person from whom they are forfeited has no right in law to have them restored to him. Although the present policy, in most cases, is to restore such survey numbers under certain conditions to the former occupants the Collector has still full discretion to depart from this practice and to refuse such applications whenever he considers it expedient to do so. He is at liberty to refuse to recognize Civil Court Decrees in respect of such survey numbers as is clearly shown in the Commissioner's Circular No. 6 :5 quoted above".

Mr. Lawrence—

In 1917 the Manual of Commissioner's Special Circulars was revised and republished by Mr. (now Sir Henry) Lawrence.

Paragraph 6 of Special Circular No. 23 in the Revised Manual runs as follows:—

> "6. Although the ordinary practice hitherto followed has been to restore fallow forfeited survey numbers to the occupants from whose khata they were forfeited, it should be distinctly understood that such restoration is merely an act of grace, the *ex*-occupants having no indefeasible legal right to it. Where there are special

reasons against regrant of such survey numbers, *e.g.*, vicinity to a village, the requirements of the Forest or any other Department, or when the numbers have been left on the list of forfeiture so long that they may practically be said to have been abandoned the Collector is at liberty to refuse the application of the former occupants. It should be borne in mind that fallow forfeited numbers being the property of Government, Civil Court decrees in respect of them are not binding on the Collector."

Mr. Mountford—

In 1922 an enquiry was made as to the levy of malkano on restoration of fallow forfeited lands more than 10 years old, and it was found that the practice in 5 districts out of 7 was to consider lands which had been under forfeiture for more than 10 years as 'abandoned' in the sense of paragraph 6 of Special Circular No. 23. Mr. Mountford accordingly issued the following amendment in his No. 58-B., dated 19th November 1923, as rule 14 of Part II of the Circular.

"When fallow forfeited numbers are restored within 10 years of the date of forfeiture to their former occupants on the ordinary tenure (*vide* paragraph 18 below) only the fallow assessment on account of non-payment of which the numbers were forfeited should be levied by way of malkano and no payment should be demanded on account of trees standing in the land. This concession should not however be taken as in any way affecting the sole right of Government to the timber or as giving the previous occupants any sort of claim to the same so long as the numbers remain unoccupied. When the numbers are given to persons other than former occupants or when they are restored to the former occupants more than 10 years after the date when the payment of fallow assessment became due, malkano and the price of trees should be recovered in the same way as in the case of other Government unoccupied lands."

Mr. Rieu—

In his No. 1829-I., dated 13th March 1923, the Commissioner issued the following orders to all district officers :—

"The Commissioner is pleased to direct that, from the date of this circular and pending further orders, all restoration of fallow forfeited land within the area commanded by the Sukkur Barrage should cease absolutely."

In his Circular No. 1309, dated 17th March 1923, Mr. Rieu also issued the following order :—

"The Commissioner in Sind is pleased to direct that in future fallow forfeited land shall not be regranted on any canal on which there is for the time being restriction against the giving out of fresh land, unless the following two conditions are fulfilled :—

(1) that the land was fallow forfeited on a date subsequent to the imposition of the restriction provided that the forfeiture is not more than 10 years old.

(2) that its regrant does not necessitate the provision of any new karia or the widening of the inlet of any existing karia ".

21. It is open of course to every one to put their own interpretation on these instructions, but we cannot find in them anything which could fairly be described as a 'pledge', although most of the non-official witnesses have given a very strong affirmative answer to our question 19. All of the passages quoted above are executive instructions to district officers about the disposal of land, and even if they were all in favour of recognizing any absolute lien on forfeited lands (which is certainly not the case) they cannot fairly be construed as promises to the

Zamindars to whom as a matter of fact they were never directly communicated. On the other hand we readily admit that as a result of these instructions there grew up an almost universal belief that forfeited lands would be restored to the original occupants on payment of fallow assessment, and a general, if not universal, practice of restoration to any former occupant who applied. It was not until after 1915 that District Officers began to recognize even 10 years' forfeiture as extinguishing a claim to restoration on payment of fallow assessment. Before that time, therefore, land was allowed to be forfeited in the belief that it would be restored on application, and there can be no question that the general practice justified that belief And in these circumstances, although we hold that there is no lien in the sense of any legal claim, and that not one of the orders of any Commissioner from the very beginning can be regarded as a 'pledge', yet the practice of restoration was so general for a period of at least 25 years that the zamindars quite naturally came to regard it as a normal part of the system and to arrange their cultivation accordingly. And as Government and its Officers encouraged them to do so it is not possible for Government now to refuse to admit that a lien, in the sense of an equitable claim, does exist.

22. There remains for consideration the terms on which such restoration should be made.

It may be admitted that there is no logical reason why lands forfeited for non-payment of fallow assessment should necessarily be restored to their former owners any more than lands forfeited for non-payment of any assessment. But (as we have indicated above in paragraph 21) we consider that in view of the practice long prevailing in Sind former owners have a claim to restoration which it would be unjust to ignore. It seems reasonable to regard this claim as diminishing in force in proportion to the number of years which have elapsed since the land was fallow forfeited. But even in cases of the oldest forfeitures, we think that the claim does to some extent persist. For this reason we consider that throughout Sind former occupants or their heirs should ordinarily be allowed the first refusal of lands forfeited from their khata for non-payment of fallow assessment, provided that they are in a position to cultivate them if restored. We do not consider that this privilege should be extended to those to whom former owners have disposed of their rights by sale, gift, or mortgage effected after the lands have been forfeited and have been entered on the Government khata. For obviously no transfer effected after the land has ceased to be the property of the transferrer has any legal force, or can be regarded as in any way binding on Government. In the event of such transfers the Collector should be at liberty to ignore both the transferrer and the recipient.

23. When considering the question of the terms and conditions on which such restorations should be made, it is once again necessary to make a distinction between the Barrage and non-Barrage areas. In the latter the value of the land when restored is not as a rule likely to differ very widely from its value before forfeiture. So far as lands forfeited within ten years are concerned it has always been and still is the practice to restore them to their former holders on payment of a malkano which is equal to the arrears of fallow assessment. We see no reason to change this practice.

24. Even in respect of lands forfeited more than ten years ago we do not consider that the former owners should be ignored, since at the time their lands were forfeited they had every reason to expect that they would be able to get them back. Had they thought otherwise, it is possible that some at least of them would have paid the fallow assessment in time and saved their land from forfeiture. It does not however necessarily follow that the land should be restored in all such cases on payment of single fallow assessment. Had the occupants retained the lands on their khata, they would in the course of ten years have had to pay fallow assessment twice, and in fifteen years three times, and so on. It would therefore not be unreasonable to charge a higher rate for lands forfeited more than ten years ago, and we recommend that this should ordinarily be twice the fallow assessment, subject to a maximum equal to the usual malkana of the deh. In reckoning this period of ten years, all years in which restoration has been restricted should be

excluded. Of course if a zaminder declines to accept a number on these terms, and some one else can be found who is willing to take it up, the Collector should be at liberty to grant it to an outsider on the usual terms. As regards lands that may be fallow forfeited hereafter, however, we consider that the former owners' equitable right to a first refusal might well be limited to ten years after forfeiture.

25. On canals on which restriction has been imposed for lack of water, restoration must of course be postponed until such time as the restriction is removed. In the event of a partial restriction, preference should ordinarily be given to the regrant of fallow forfeited numbers which are capable of irrigation and cultivation, as against the grant of new lands. We are further of opinion that in order to facilitate restoration of fallow lands, the early removal of restriction is desirable, wherever it may be possible. We understand that Public Works Department authorities are already considering how this end can best be attained.

26. In the Barrage tract the position is very different. It is true that here also the same general principle holds good, and that the former owner or his heirs have ordinarily an equitable claim to restoration. But in this tract, when land is restored, the former owner will be receiving land vastly more valuable than it was when it was fallow forfeited. And the longer the land has been lying on the Government khata, the greater will probably be the difference between its original value when forfeited and its prospective value when restored. This great enhancement of value will be due almost entirely to the construction of the Barrage, and the introduction of an assured and in most cases a perennial supply. There can be no good reason why the former owner should retain the whole of this unearned increment, and the State which pays for the Barrage, receive no share It is therefore obviously necessary in the Barrage area to charge for restored fallow lands a malkano very much higher than the arrears of fallow assessment for which land was forfeited. The Revenue Officer has calculated that if all forfeited fallows were restored on paymunt of fallow assessment only, this would involve the State in a loss of 367 lakhs, assuming an average market value of Rs. 100 per acre for the land. It seems unnecessary to elaborate the point further.

27. We understand that Government have undertaken to make certain very generous concessions in respect of 'mohag' lands, *i.e.*, to offer to original zamindars a certain amount of land lying on their immediate frontage at a rate greatly below its market value. Now we consider that a zamindar's equitable claim to the restoration of land recently fallow forfeited from his khata is stronger than any claim he may possess to waste land lying on his 'mohag.' But the claim to a fallow forfeited land diminishes in force in proportion to the time that has lapsed since forfeiture. Therefore in the case of old forfeitures, although the former owner in our opinion still retains some claim to restoration, we are not prepared to hold that this requires the land to be regranted to him at the same rate as for recent forfeitures, or at as low a rate as that fixed for 'mohag' land.

28. We propose therefore that all lands forfeited not more than ten years before the year 1924-25 (from which year the fallow rules were suspended in the Barrage area) should be offered to their original owners or their heirs at a malkano equal to 75 per cent. of whatever concession rate may be fixed for 'mohag' lands. Lands forfeited more than ten years before that year should be similarly offered at a rate double the above, *i.e.*, at $1\frac{1}{2}$ times the concession rate for 'mohag' lands. It is probable that some survey numbers which have been fallow forfeited may also lie on the immediate 'mohag' of their former owners and will therefore fall into both categories. Such land should be charged only the concession rate for 'mohag' land if this is less than the fallow malkano leviable under our proposals. In the case of khatedars of moderate means we recommend that the malkano, if any substantial sum is involved, be recovered by instalments.

29. Our non-official colleagues are anxious that the Committee's proposals should fix a definite rate of so many rupees per acre as the malkano to be charged for fallow forfeited land in the Barrage. No doubt it would be in many ways much more satisfactory if we could name a definite price and say that this is the

lowest price which can be suggested if the Barrage is to pay its way, and this therefore should be fixed. But we at least possess no information regarding the financial prospects and conditions of the Barrage on which to base such a calculation. We note that Mr. Baker, the Revenue Officer, has suggested that lands forfeited within ten years should pay the ordinary concession rate of malkano, which he says might amount to Rs. 20 per acre. But we are unable to ascertain from him the calculations on which this figure of Rs. 20 was based, and are therefore unable to adopt it as the basis of our own proposals. We consider that there are good grounds for recommending that the malkano charged for fallow lands should bear a certain relation to that fixed for 'mohag' lands. It would also be not unreasonable perhaps to suggest that it should bear a certain relation to the market value of the land, though in practice this would be open to the objection that the market value of any given survey number would be very difficult to ascertain without auction. But we can think of no good grounds on which to base any proposal for a fixed all round rate for fallows, irrespective alike of the market value and of the concession rate for 'Mohag' land.

30. We would recommend that in dealing with the regrant of forfeited lands in the Barrage area, the Revenue Officer should be allowed discretion to grant not the actual land forfeited, but land equal to it in area and approximate value whenever he may find such a step necessary in order to make up compact holdings. It is probable that some of these fallow forfeited lands will consist of small isolated patches scattered about amid large blocks of waste land. If they must necessarily be restored to their former owner in their present position and shape, the problem of disposing of the waste lands will be very greatly complicated.

31. We are of opinion that all regrants of fallow forfeited land in the Barrage area should be accompanied by a strict prohibition against alienation for a term extending to at least ten years after the date on which the Barrage irrigation is introduced into the deh in which the land is situated. Unless this is done, an owner who has received the land at a price representing a mere fraction of its market value, will be able to dispose of it at a profit to outsiders: and it is perfectly certain that a very large number will do so. Not only will this mean that the original zamindars of Sind will lose most of the benefits of a concession expressly intended to secure them in the possession of their lost lands, but it will certainly reduce the price which Government may expect to obtain in open auction for their own waste lands.

32. We have also considered the question when the restoration of fallow lands should take place in the Barrage area, and if at once, whether it should be on the condition that cultivation shall not commence till the land can receive Barrage irrigation. It seems obvious that on those inundation canals where the water-supply is deficient, and restriction has been imposed on that account, the newly restored lands could not be cultivated from the existing canals without prejudice to the water-supply of lands already occupied. In their case therefore immediate restoration is not advisable. Doubtless the Revenue Officer will be able to arrange for the regrant to be made in sufficient time to enable the owners to prepare the land for cultivation to be undertaken as soon as they can receive Barrage water.

33. But there are doubtless some lands on existing canals for which an adequate water-supply is immediately available. We recommend that such lands should be restored as soon as the Revenue Officer can conveniently arrange to carry out the restoration without prejudice to his programe of land sales: and that the grantees be permitted to irrigate their lands at once from the existing canals, until such time as Barrage irrigation commences.

(Sd.) W. F. HUDSON.

(Sd.) S. H. COVERNTON.

(Sd.) C. M. LANE.

APPENDIX A.

Questionnaire.

The Fallow Rules Committee would be grateful if you would favour them with answers to such of the following questions as may be within your knowledge and experience. Question No. 1 (*c*) (i) to (vi) are intended for zamindars only. The answers may kindly be sent in by the 5th November at the latest.

1. (*a*) What is your name, caste, residence and profession?

(*b*) What experience have you of the Sind Land Revenue system?

(*c*) If you are a zamindar, then—

(i) on what canal are your lands situated, and in what taluka?

(ii) are your lands flow or lift?

(iii) what kind of crops do you raise?

(vi) how much roughly of your lands do you cultivate every year?

(v) have you ever paid fallow assessment: if so, how much per year during the last ten years? To what extent, if any, have your lands been forfeited for non-payment of fallow assessment during the above period?

(vi) what were your reasons for leaving the land uncultivated for a continuous period of 5 years?

2. (*a*) Does the quality of soil in Sind permit its being cropped year after year? If not, how long a period is needed for fallows to renovate the soil?

(*b*) Do zamindars experience difficulty in securing agricultural labour, and is the labour available at present insufficient?

(*c*) What are the chief reasons which compel a zamindar to leave his land fallow for two, three or more years?

(*d*) Is rotation of crops practised in Sind? Do some zamindars grow different crops, *e.g.*, juwari and wheat every year without manure?

Do some zamindars grow the same crop every year without manure?

Do some zamindars grow restorative crops, *e.g.*, chana, in alternate years?

If so, why cannot land be cultivated every year?

(*e*) Are there difficulties in the way of securing sufficient quantities of manure for the fields?

3. Are you in favour of the abolition or modification of any of the fallow rules? If so, which? Give reasons.

4. If you favour retention of fallow rule 4, would you advocate a longer or shorter period than 5 years for the purpose of fallow assessment? If so, give your reasons.

5. Can the levy of fallow assessment be defended as a tax on undeveloped land?

6. In other parts of the Bombay Presidency, assessment is levied on land from year to year irrespective of the question whether it is cultivated or not. Is there any special reason why in Sind only cultivated lands should be assessed? Is this justified by any peculiar conditions of Sind?

7. Do you know whether in pre-British days the Mirs levied battai in right of proprietorship over the land or by way of tax, and whether they made any

charge for fallow land: what was the system of occupancy? The authorities for your answer should be stated.

8. (*a*) Is rule 4 of the fallow rules necessary or desirable in the interest of Government, and if so, why?

(*b*) Does it affect injuriously the interests of the zamindars, and if so, how?

(*c*) Does the fear of the imposition of fallow assessment compel zamindars to cultivate lands which they would not otherwise have cultivated?

9. Do you consider that Government gain anything by the forfeiture of land for non-payment of fallow assessment? Give reasons for your reply.

10. What were the reasons which Government had in view when originally introducing the fallow rules, and especially rules Nos. 1, 2 and 4? Do those reasons still hold good, or has any change in circumstances, made the retention of the fallow rules no longer necessary?

11. Do you object in particular to any of the changes which have been introduced in the fallow rules from time to time, and if so, which?

12. Do you approve of the amendment recently made in rule 7 whereby postponement of fallow assessment has been substituted for remission? State your reasons,

13. (*a*) If an adequate water-supply is guaranteed, would you still advocate abolition of rule 4 as applied to lands lying uncultivated?

(*b*) Would such a guaranteed supply either render fallows altogether unnecessary, or reduce the existing period of fallows?

14. Are you in favour of the separation of water tax from land tax (*a*) on perennial irrigated lands, and (*b*) on lands cultivated with kharif water only on inundation canals? Would zamindars be prepared to pay land tax only, without water tax, each year on land lying uncultivated?

15. Before the introduction of the irrigational settlement of 1875, Sind had what was known as a fallow diffused settlement. Which of the two systems do you prefer, and which was in your opinion more favourable to the agriculturalist? Please give your reasons.

16. Do you consider that the levy of full irrigational combined rates* including both water rate and land rate on fallow land when no canal water has been used is fair?

17. Do you consider that in Sind the zamindar or Government is the owner of the soil? Give reasons in support of your view.

18. Do you consider that the zamindar has any lien over fallow forfeited lands? If so, what are your reasons? Do zamindars generally consider themselves as proprietors of fallow forfeited lands and regard them as merely held on deposit, till the payment of the fallow arrears due on them; or regard the restoration of fallow lands as an act of grace?

19. Were any pledges given by the Commissioner in Sind that lands forfeited for non-payment of fallow assessment would be restored to their former owners? Do you consider that these pledges are still being fulfilled? If not, since when have they been disregarded?

20. Do you approve of the prohibition recently imposed on the restoration of fallow forfeited lands irrigated from a canal which is subject to "restriction" if they were forfeited before the restriction was imposed? Reasons for your answer should be stated.

21. Is deficient water-supply in a canal a good reason for not permitting the immediate regrant of fallow forfeited lands on that canal?

22. Are you in favour of retaining a time-limit within which old fallow forfeited lands should be restored on payment of fallow assessment, and if so, what time-limit do you suggest?

23. Are you in favour of the restoration of fallow forfeited lands to their original holders or their heirs, and if so, on what terms, (*a*) now, in non-Barrage areas, (*b*) in the Barrage area now before the opening of the new canals, and (*c*) in the Barrage area after the opening of the new canals.

24. Do you approve of the temporary suspension of regrants of fallow forfeited land which has been ordered within the Barrage area? Reasons for your reply should be stated.

A. K. MAHOMED HUSSAIN,
Secretary, Fallow Rules Committee.

Karachi, 6th October 1925.

APPEDIX B.

List of witnesses to whom the Questionnaire was issued.

OFFICIALS.

1. Mr. C. M. Baker, C.I.E., I.C.S., Revenue Officer, Lloyd Barrage and Canals Scheme.
2. Mr. C. S. C. Harrison, Chief Engineer, Lloyd Barrage and Canals Construction.
3. Mr. A. Gordon, Executive Engineer, Lloyd Barrage and Canals Construction.
4. Mr. D. R. Sawhney, Superintending Engineer, Eastern Nara, Lloyd Barrage and Canals Construction.
5. Mr. V. N. Vartak, Chief Engineer in Sind.
6. Mr. H. L. Francis, Executive Engineer, Public Works Department, Sind.
7. Mr. D. H. Punwani, Executive Engineer, Eastern Nara.
8. Mr. Chainrai Bulchand, Daftardar to the Collector of Karachi.
9. Mr. Hotchand Chandumal, Deputy Collector, Tatta.
10. Mr. I. H. Taunton, I.C.S., Collector of Hyderabad.
11. Mr. Valabdas Parumal, Deputy Collector, Tando.
12. Mr. C. G. Henderson, I.C.S., Collector of Thar Parkar.
13. Mr. Nuruddin Sidiki, Deputy Collector, Nara Valley.
14. Mr. Hardasmal Udernomal, Collector of Nawabshah.
15. Mr. Ghulam Sidik Mahomed Usman Isani, Deputy Collector, Nawabshah.
16. Mr. L. N. Brown, I.C.S., Collector of Sukkur,
17. and with one spare copy for an officer subordinate to him.
18. Mr. Hamid A. Ali, I.C.S., Collector of Larkana.
19. Mr. Vastiram Dialmal, Deputy Collector, Mehar.
20. Deputy Commissioner, Upper Sind Frontier.
21. Mr. R. H. Davies, Assistant Collector, Larkana.
22. K. B. Nabi Baksh, Manager, Incumbered Estates.
23. K. S. Nur Nabi, Revenue Assistant Commissioner.
24. Mr. Gurdasing Teumal, Daftardar to the Collector of Sukkur.
25. Mr. Chetanram Lala, Land Acquisition Officer, Larkana.
26. K. S. Mahomed Baksh Illahi Baksh, Deputy Collector, Naushahro.
27. K. B. Gul Mahomed Abdul Rahman, Acting Deputy Director of Agriculture.

NON-OFFICIALS.

Karachi District.

28. Sayed Haji Abdul Rahim Shah, Sujawal.
29. Mr. Mahomed Jaffar Khwajo, Mirpur Bathoro.
30. K. B. Wali Mahomed Hassan Ali, M.L.A., Secretary Sind Mahomedan Association, Gharrikhata, Karachi.

31. Mr. Arbab Haji Khamiso, M.L.C.
32. K. B. Khair Baksh Laghari.
33. Mr. Harchandrai Tahilram, Zamindar, Tatta.
34. Mr. Arbab Haji Khamiso, Representative of the Karachi District Zamindar's Association.

Hyderabad District.

35. Rai Bahadur Hiranand Khemsing, Hyderabad (Sind.)
36. Rai Sahib Udharam Shewakram, Hyderabad (Sind.)
37. Sayed Haji Abdul Hakim Shah, Zamindar, Tikhar, taluka Guni.
38. K. B. Mir Ghulam Mahomed Khan, O.B.E., Tando Bago.
39. Sayed Nabi Baksh Shah, Badin.
40. Mr. Wali Mahomed Khan Notkani.
41. Mr. Akhund Atta Mahomed, Matiari.
42. Mr. Khalifo Allah Baksh Nizamani.
43. Mr. Idanmal Menghraj, Secretary, Tando Zamindars' Association
44 Mr. Haji Mahomed Haji Ismail Patoli, Tando Allahyar.

Thar Parkar District.

45. Mr. Sayed Ghulam Nabi Shah, M.L.C., Mirpurkhas.
46. Mr. Jan Mahomed Khan, M.L.C., near Head Post Office, Hyderabad.
47. Mr. Sahibsing C. Shahani, Principal, D. J. Sind College, Karachi.
48. Mir Ghulam Shah wd. His Highness Mir Fateh Khan.
49. Mr. Dingomal Hukumatrai, Hyderabad (Sind.)
50. Mr. Allah Baksh, Secretary, Muslim Zamindars' Association, Mirpurkhas.
51. K. S. Sher Shah.
52. Babu Sundersing.
53. Mr. Darshansing Bakshi, Secretary, Jamrao Sikh Association.

Nawabshah District.

54. Mr. Mirza Farrukh Beg, Bar-at-Law, Nawabshah.
55. Sayed Murad Ali Shah, Bhiria.
56. Mr. Haji Gul Mahomed Khan Khero, village Malik, Moro.
57. Mr. Haji Imam Baksh Khan Jatoi, M.L.C.
58. Rai Sahib Tharumal Bilaram.
59. Captain Ajaib Ali Shah.
60. Mr. Manohardas Kouromal.

Sukkur District.

61. Mr. Allahdino Rahujo.
62. Mr. Ghulam Nabi Mahar.
63. K. B. Jan Mahomed Khan Pathan, M L.C., Municipal Councillor and Honorary Magistrate, Shikarpur.

64. Wadero Mahomed Panah Dakhan.
65. Sheikh Ghulam Mahomed, Retired Deputy Collector.
66. Mr. Abdul Rahman Pirzado.
67. Rai Sahib Gokalsingh.
68. Mr. Pahlajani Bhojsingh, M L.C.

Larkana District.

69. Representative of Mahomedan Association, Larkana District.
70. K. S. Ghulam Mahomed Khan Isran.
71. K S. Ali Hassan Hakro, President Municipality, Kambar.
72. Serai Sultan Khan Jatoi.
73. Mr. Aildas, Nasirabad.
74 Diwan Bhojraj, Taib, Ratodero.
75. Mr. Mahomed Sidik Wagan, Wagan, taluka Warah.
76. Mr. Kundansingh Lahori, Retired Deputy Collector.
77. Wadero Jan Mahomed Khuhro.

Upper Sind Frontier District.

78. K. B. Chakar Khan Suhriani.
79. K. B. Dilmurad Khan Khoso.
80. Mr. Osto Abdullah.

APPENDIX D.

HISTORICAL NOTE ON FALLOWS IN SIND.

The question of fallows appears to have been first discussed by Sind Revenue Officers in 1862. It was admittedly the general practice with zamindars to allow their lands a period of fallow, cultivating them in some cases every second year, but more generally every third year. Considerable difference of opinion was found to exist as to the necessity of fallows. Captain Haig, Settlement Officer, was of the opinion that no fallows were required. Major Francis, Superintendent, Revenue Survey and Assessment, observed as follows :—

> "It is not improbable that fallows might be dispensed with, were an improved system of tillage and a rotation of crops introduced, as suggested by Mr. Inverarity. But as it is almost the universal custom of the country to allow them and as the population is said to be insufficient for the cultivation of the large areas of land available for this inundation wheel cultivation, it would be almost impossible to introduce a different system of cultivation from that which now obtains. To me it appears, that if we attempt to fix an assessment, based on the theory that fallows are unnecessary and calculated on the value of a crop to be annually produced from these lands, our settlements would be extremely unpopular with the zamindars and the relinquishment of great part of their land would be the result of such a measure. But putting aside the question as to whether fallows were formerly recognized, or whether they would be necessary under an improved system of tillage, it would be mistaken policy, in my opinion, to introduce a system of settlement opposed to the universal custom of the country in such matters. It is of great importance to the success of the settlement of land revenues of this Province that our plan of operations should be popular among an influential class like the zamindars."

The same officer, when he was placed on special duty to report on the plan of classification and settlement suitable for adoption in the Sind survey, made the following observations in his report, dated the 16th March 1863 :—

> "Agriculture may certainly be said to be in a very primitive state at present in Sind. No rotation of crops is practised while the application for manure is by no means general. The non-observance of these first principles of agricultural chemistry is not of much importance perhaps as regards the cultivation of lands which are annually flooded, as they are fertilized and renovated by the deposit left by flood waters, but in others not so circumstanced (and they form by far the greater portion of the culturable land), it is a matter of serious consequence, as it necessitates the use of fallows as a means of renovating the soil. The observance of such a practice would be a very serious matter indeed for the welfare of the people, if Sind were a thickly populated country: but as its population is insufficient for the cultivation of its culturable area, the effect of such a wasteful system of tillage is not felt to the extent it would be under ordinary circumstances (paragrap 56)."

> "My enquiries upon the subject have led me to the conclusion that the very best soils of the kind can be cultivated only every other year with advantage as a general rule. It is the common practice to allow two fallows after a year of cultivation in middling, and three or four in the poorest soil; and I am persuaded it would be unsafe to disregard the common practice in this respect. Our assessment should, therefore, in my opinion, be calculated on consideration of the soil being productive only to the extent indicated above."

Mr. Mansfield, then Commissioner in Sind, expressed his entire concurrence with Major Francis on the question, in his letter No. 196, dated the 9th July 1863, to the address of the Government of Bombay. Government in paragraph 10 of

their letter No. 3888, dated the 4th November 1868, remarked as follows:—

> "With regard to the question of fallows touched upon by Major Francis, it is one that can be adequately disposed of only by the Settlement Officer when he comes to fix his assessments. Consideration of soil and practice must guide the decision in each case; no rule on the point can consequently be laid down."

II.

The first revenue settlement introduced in Sind was the fallow-diffused settlement, under which fallows were allowed for in fixing the assessment, that is to say, the cultivators paid a diffused rate on cultivation and fallow together. Under this system the practice was to make large survey numbers, to classify them according to soil and irrigational facltilies and to impose an assessment at a rate that would allow for the number of fallows considered necessary. Thus if the full assessment on a field when cultivated was estimated at Rs. 4 an acre and two fallows were needed the annual assessment payable was fixed at one-third of Rs. 4. This system worked very unsatisfactorily, because—

(1) zamindars after cultivating these large survey numbers promptly resigned them and thus deprived Government of the large part of the assessment due from them, and

(2) the zamindars at the head of a canal cultivated the whole of their land in the first year instead of doing so by a regular system of rotation, and thus deprived the zamindars at the tail, of their fair share of the water of the canal.

A conference was therefore held to devise some other arrangement more suitable to the conditions of agriculture in Sind. A member of the Bombay Government and Colonel Sir W. L. Merewether, Commissioner in Sind, were also present at this conference. The conclusions arrived at resulted in the issue of Government Resolution No. 1438, dated the 10th March 1875, in which *inter alia* it was laid down "that zamindars could not legally claim a proprietary title in any land they did not cultivate or pay for and therefore that any concession made to them on account of any waste land they might desire to retain, must be considered a matter of grace." At the same time it was admitted "that zamindars had certain claims over waste lands which it was only right and politic to respect." With a view to give favourable terms to the zamindars it was decided to introduce a lease system in Sind which was to include all waste lands there might be any reasonable prospect of a zamindar being able to cultivate, permanently or in rotation, for the term of settlement at a reduction on the whole not exceeding 30 per cent., on condition of his not throwing up any portion during its currency. This system was intended for the class of zamindars paying Rs. 300 or more per annum as land revenue assessment. It further appears from the Government Resolution that notwithstanding the advantage the fallow-diffused system gave, it was not looked upon favourably by the great mass of the cultivators, who would have preferred paying full assessment on what they cultivated to paying a diffused rate on cultivated and fallow together, provided they were protected from the risk of other people taking up the land left fallow by them for a reasonable time. To safeguard the interests both of Government and of these people, it was therefore decided to reduce the size of survey numbers under wheel irrigation by making each only sufficiently large to be cultivated under the single wheel in one season and liable to assessment at full rates instead of one-third. Under this arrangement a man holding wheel land could take up as much as he proposed to cultivate in a single season and could continue to hold it continuously, if he chose. If, however, he could not do so without fallowing it, he could throw it up on the understanding that he had a lien on it for two years, and that in the third year if he did not take it up again his right of occupancy lapsed to Government, who could then give it out to some one else. In view, however, of the fact that the system of a diffused rate on cultivation and fallow had the advantage of enabling an industrious man who cultivated his land year after year to do so on very favourable terms, it was decided to give him the option of adhering to this system whereby he could have

all the land in his holding usually cultivated on the fallow system, at the one-third or other diffused rate, on the condition that he should hold it without the option of relinquishing any portion of it for the full ten years of the settlement. This was not to apply to any rice, 'sailabi' or barani land or to the estates of large zamindars, unless they refused leases.

III.

In the year 1878 a conference of Revenue Officers assembled at Karachi to discuss various matters of detail connected with the working out of the new system of settlement sanctioned in the above-mentioned Government Resolution of 1875. One of the subjects so discussed was that of fallows. With regard to this it was the general opinion of the members of the conference that the matter should form the subject of special proposals suited to local requirements in the settlement report of each taluka. Government concurred in the view (*vide* paragraph 1 of Government Resolution No. 5101, dated the 5th October 1878). The Commissioner in Sind (Mr. Peile), while referring the Settlement Officer Colonel Haig to these orders, requested him to furnish the necessary proposals for every taluka in which the revision settlement had been introduced. In compliance with this, Colonel Haig recommended the following scale of fallows for adopotion in talukas Kandiaro, Naushahro, Moro and Sakrand in the Hyderabad district, Sukkur and Rohri in the Shikarpur district, and Kotri and Sehwan in the Karachi district :—

(*a*) For rice fields—
One year's fallow to three of cultivation.

(*b*) Other kharif land under flow irrigation—
Two years' fallow to one of cultivation.

(*c*) Kharif land under lift irragtion—
Three years' fallow to one of cultivation.

(*d*) Rabi land, wheat and barley only, under lift cultivation—
One years' fallow to one of cultivation.

(*e*) Other rabi lands—
One year's fallow to three of cultivation.

Colonel Haig's recommendations, which were supported by the district officers and the Commissioner in Sind and submitted to Government in October 1878, were sanctioned in paragraph 2 of Government Resolution No. 677, dated the 7th February 1879. This was also the scale most commonly adopted in talukas, the settlements of which were revised after the year 1879.

The lease system did not, however, prove acceptable to zamindars, owing to the scarcity of the labour-supply and the risk to which they were exposed from floods and drought. Mr. Erskine in his letter No. 1935, dated the 20th May 1880, to the address of Government, expressed his opinion as follows :—

> "Your Excellency will perceive that in my opinion and in that of the officers in the Province best qualified to judge, it would not be desirable to grant leases to the zamindars, and, further, that it is not possible to grant them on the terms sanctioned by the Government of India or on any reasonable terms; and lastly that the zamindars themselves, evince no desire to hold their estates on lease, unless they are allowed to hold at nominal rates and are promised remissions when any failure of crop occurs. I am satisfied that it would be well to abandon all idea of granting leases to 'large zamindars', which term has been interpreted to mean all zamindars paying thirty pounds a year (Rs. 300) as assessment. Men of this class are—the majority of them—of no position and there is no reason they should be treated in a special way. Under the recently introduced revised settlement with its liberal system of fallows they have no reasonable grounds whatever for dissatifaction."

Government approved of the above proposals in their Resolution No. 6647,

dated the 16th December 1880. Thus the scale of fallows mentioned above was made applicable to all lands under revision settlement.

During his tour in 1881-82 Mr. Erskine received many complaints regarding the working of fallow rules and discovered that they had not been properly understood by Revenue Officers. He therefore issued an explanatory circular, *vide* Special Circular No. 36, dated the 13th April 1882, premising as follows :—

> " Fallow rules were deemed necessary in Sind because it is not customary to cultivate annually all lands, but at the same time occupants, though not cultivating numbers, are unwilling to resign them as they have generally expended money in clearing karias, &c. For this reason Government determined that lands might be retained by occupants who did not cultivate them according to a fixed scale determined generally at the time a settlement is introduced. This is a very liberal scale, and has admittedly been fixed so as to allow more fallows than the land requires in order to leave a margin for unforeseen events, accidents, &c."

In this circular Mr. Erskine further enunciated, among others, the following principles :—

(1) Land taken up was to be cultivated for the number of years mentioned in the scale before it could become entitled to any fallow.

(2) It was not compulsory for an occupant to let his land lie fallow when it became so entitled if he thought it his interest to cultivate it on the understanding that he could not accumulate fallows.

(3) It was not compulsory to cultivate fields in a fixed rotation.

(4) Occupants cultivating fields which they had the option of leaving fallow could claim remission in the event of water-supply failing, &c.

IV.

The peculiar conditions of Sind, however, militated against the principles of the revision settlement, and as a result a form of temporary settlement was devised by Mr. Erskine and Colonel Haig (*vide* Government Resolution No. 3397, dated the 13th June 1881). In talukas under "temporary settlement" classification of soil and water was abandoned, and intial values were fixed for each class of irrigation but no fallow rules were in operation. This system was at first intended to be experimental, and under it land already under occupancy or newly taken up was liable to assessment only when cultivated and could be held for an indefinite period without rendering its owner liable to any payment thereon. The inevitable result was land-grabbing on the part of large zamindars and loss of revenue to Government. Colonel Anderson, Superintendent, Sind Revenue Survey, brought this state of things to the notice of the Commissioner in Sind in his No. 52, dated the 19th January 1885, and made the following two important proposals :—

(1) all land in talukas under temporary settlement to be liable to assessment at least once in five years, and

(2) all newly granted land to pay assessment for the first year of its being taken up and thereafer, in the event of its remaining uncultivated in the meantime, to pay assessment every fifth year.

The district officers consulted, supported Colonel Anderson's view. Thereupon Mr. Erskine in his No. 2972, dated the 23rd July 1885, proposed to Government the appointment of a representative committee of officers to collect information, discuss details and make recommendations on this matter. In referring to the fallow rules then existing, he charaterized them as exceedingly unpopular and advocated a simpler system. Government approved of the proposal in their Resolution No. 6772, dated the 19th August 1885. The committee met and the results of its deliberations, with a few verbal alterations, were sanctioned by Government in the Resolution No. 2399, dated the 21st April 1887.

In forwarding the committee's recommendations to Government Mr. Erskine made the following remark in paragraph 4 of his letter No. 2944, dated the 21st/26th August 1886:—

> " It is hardly necessary for me to explain why a system differing from that found in the Presidency proper exists in Sind as regards fallow lands. This was fully discussed before the existing fallow rules were sanctioned by Government. Suffice it to say that, with the exception of garden lands and of some rice lands, no survey numbers can be continuously cultivated but at the same time they cannot be relinquished when not required for cultivation, as the occupants have, in almost every case, expended considerable sums in excavating water-courses and branch irrigating channels, without which in Sind cultivation cannot be carried on, and they could not be expected to relinquish lands on which so much labour and capital have been expended."

The fallow rules sanctioned in 1887, have remained in force ever since.

APPENDIX E.

Copy of letter No. 1895, dated 20th June 1913, from the Commissioner in Sind to the Government of Bombay.

The Commissioner in Sind has the honour to submit the report called for by Government in their marginally noted communications and to append thereto a historical note on the subject of the fallow rules in Sind.

Memorandum No. 8327, dated the 17th September 1910, and subsequent memoranda ending with No. 2008, dated the 28th February 1913.

2 The papers to which the attention of the Commissioner was invited by Government Memorandum No. 8327, dated 17th September 1910, present two entirely opposite aspects of this subject On the one hand there is the demand of the Sind Mahomedan Association and the Hon'ble Mr. Bhurgri that the fallow rules should be abolished in the sense that the zamindars should be relieved of the obligation to pay assessment on land which they leave uncultivated; on the other hand there is the suggestion of the Government of India and of the expert critics of the Agricultural Department that the time has now come when either these rules should be abolished in the sense that assessment should be levied every year on all occupied lands whether cultivated or not, or else the fallow period allowed by the rules should be considerably reduced.

3. The Commissioner presumes that it is not the wish of Government that he should discuss at any length the question of the abolition of the rules in the first sense. The origin and the object of the present fallow rules is clearly set out in the historical note hereto appended, a perusal of which and of the numerous decisions of Government upon which it is based, will, it is hoped, demonstrate the extraordinary fallacy of the views held by the Hon'ble Mr. Bhurgri, as to what he styles the "proprietary rights of the zamindars of Sind" and dispose of his truly amazing statement that "all that Government is interested in is that the zamindar should cultivate one-fifth of his holding every year." Moreover the reply given by His Excellency Lord Sydenham on January 20th, 1909 to the address presented to him by the Sind Mahomedan Association was a definite pronouncement of the policy of Government to encourage intensive cultivation in Sind.

4. It may, however, be of interest to Government to know that the question of the abolition of the fallow rules in the sense advocated by the Hon'ble Mr. Bhurgri has been most exhaustively examined by the Commissioner in Sind on three separate occasions during the last 8 years, twice by correspondence and once in conference with all the senior revenue officers of the Province. On each occasion there has been practically a unanimity of opinion that the retention of the fallow rules more especially of rule 4 is absolutely necessary both in order to prevent idle and thriftless cultivators from continuing to hold lands which they are unable and unwilling to cultivate, and to restrain others from taking up land with the sole object of increasing their holdings at the expense of their neighbours. It is also the universal belief of all revenue officers in Sind that rule 4 has acted as a great stimulus to the cultivation of lands which would otherwise have remained uncultivated.

5. The only argument on the official side that the Commissioner has ever heard advanced in favour of the extension of the fallow period from four to five or even six years, or the entire abolition of the fallow rules is that rule 4 is so frequently suspended and fallow forfeited survey numbers are so freely restored to their original owners without payment of arrears of assessment, that the rules no longer serve the purpose for which they were designed and might therefore as well be abolished. In the opinion of the Commissioner this argument affords the best possible justification of the existing fallow rules in-as-much as it is an admission that they are not enforced when failure to cultivate is due to causes beyond the control of the zamindars.

A statement marked A showing the number of cases in which the rules have been suspended during the last ten years is also appended.

6. Turning to the question of the abolition of the rules in the second sense, the case put forward by the expert critics of the Agricultural Department appears to rest on a mistaken assumption that the origin and continuance of the existing

fallow rules depends solely on erroneous theories of agricultural economy. It is as true to-day as ever that the conditions of soil and water in Sind and the character of the Sindhi cultivator do demand a more liberal fallow system than is required in most other parts of India, but, as the historical note appended to this report will show, the considerations actually underlying the existing fallow rules are quite as much of a political, fiscal and irrigational as of an agricultural character. It is, perhaps, not surprising that scientists unfamiliar with the conditions of Sind should have failed to appreciate or make allowance for this fact.

7. There is really very little that calls for comment in the somewhat disconnected letter from the late Inspector-General of Agriculture, except that it appears to have been written in the mistaken belief that perennial irrigation exists all over the province of Sind, whereas, as Government are well aware, the Jamrao is the only canal in Sind which provides such irrigation, and even on this canal a perennial water-supply will never be assured until a Barrage has been thrown across the Indus at Sukkur. The Commissioner finds it necessary, however, to correct certain dogmatic inaccuracies which occur in Mr. Mollison's letter. The observation contained in (1) of this letter that there is a "traditional belief held generally in the Revenue Service in Sind that the quality of the land now under flow irrigation is inferior" is not understood. No such belief could possibly exist in the mind of any revenue officer familiar with Sind, for the simple reason that every officer knows that, whether any particular land is flow or lift is a question that depends not upon the character of the soil, but solely upon the level at which water is supplied. On inundation canals flow lands are constantly becoming lift lands and *vice versa*, according to the character of the inundation, but everybody knows that the best lands in Sind, both in respect of soil and productiveness are those which obtain a permanent flow supply.

It is just possible that in complaining that flow lands require to be fallowed Mr. Mollison was confusing flow with lift, for whereas, given sufficient water, the fallow period for flow lands is seldom longer than two years—for rice lands the period is often not more than one year in five—the recognized period for lift lands is usually not less than three and often is as much as four years As regards (3) of his letter Mr. Mollison was obviously unaware of the fact that the Jamrao canal was designed to irrigate annually only one-third of the area which it commands, and that all lands on this canal must therefore on an average lie fallow for two years out of three. A statement is appended, marked B, which shows that on this canal during the last five years the average cultivated area has been very nearly exactly one-third of the occupied area. Waste of water on the Jamrao is penalised by the most rigid system of fines—and any leakage of water in this canal is to be ascribed to the faulty design of the canal and not to the laziness or wastefulness of the cultivators. In complaining that fallowed land before it can be brought again under cultivation requires to be thoroughly soaked by irrigation Mr. Mollison was also, surely, unaware of the fact the Sindhi 'hari' is a tenant-at-will and has no permanent stake in the land which he cultivates, and that, therefore, he cannot be expected to plough until the actual year of cultivation. In other words the 'hari' will not plough in order to enable another man to sow, and almost everywhere in Sind, owing to the scarcity of labour, he can make his own terms with the zamindar.

Mr. Mollison's note apparently applies to fallows in flow lands but it is a fact worth mentioning that long fallows are of the greatest benefit to lift lands and that after a rest of three or four years bumper crops can be raised in these lands without the use of any manure at all.

8. The criticisms of Mr. Keatinge, the Director of Agriculture, Bombay, contained in Appendix C of Government Resolution No. 2751, dated 16th March 1909, are less destructive than those of Mr Mollison and are easily met by the answer that there is no rule by which cultivators who use water only for ploughing and not for sowing can be charged assessment and that overwatering is not practised in Sind except in the case of rice lands for which there is no regular period of fallow. Mr. Keatinge rightly recognizes that on inundation canals in Sind there is unlimited land and a restricted water-supply, and his criticisms may, therefore, be supposed to apply to perennial irrigation and not to the present agricultural conditions of Sind. The moral that no land should be given out than there is water to irrigate at least once every year is one that may possibly be preached fifty years hence, but without the use of restorative crops on a grand

scale, the percentage of the cultivated to the culturable area, even on perennial canals, can never much exceed 50 per cent. (*vide* Appendix C, page 121, of the Commissioner's report on the Combined Sind Irrigation Projects).

9. As, then, perennial irrigation is as yet unknown in Sind, except in a very qualified sense on the Jamrao Canal, and as intensive cultivation cannot be practised on inundation canals where the water-supply is precarious and hardly ever suffices for more than one-third of the area commanded, the Commissioner in Sind would submit that it is premature to consider whether the existing fallow rules should be altered or abolished in order to suit the possible conditions of the future. But while on the subject of perennial irrigation he begs respectfully to be allowed to correct the belief of the Government of India that the scheme for the introduction of perennial irrigation in Sind (which is now with the Secretary of State for India) depends on the irrigated area attaining an intensity of about 60 per cent. of the culturable area within about 6 years of the opening of the works. The Indus Left Bank (Rohri) Canal is designed to irrigate only just over 50 per cent. of the total culturable area commanded, and the financial forecasts of this great project were prepared by Mr. Lucas himself on this very basis.

10. It has next to be considered whether it is possible to abolish or reduce the fallow period on existing inundation canals in Sind. Canals of this type have not been designed and cannot be relied upon to irrigate on an average more than one-third of the culturable area settled upon them ; and a practical recognition of this principle is to be seen in the restrictions that it has been found necessary in recent years to impose upon the further grant of land on nearly every large inundation canal. The Commissioner is constrained to say that in almost every part of the Province land has been given out far in excess of the irrigating capacity of the canals and it is no exaggeration to say that in a normal year, once the kharif sowings on inundation canals are completed every drop of canal water is utilized. It is only at the end of the inundation season just before the river falls that there is any surplus water in the canals and this is most keenly competed for, and could be utilized many times over for rabi cultivation in Government waste lands granted on one year leases. In the vast lift tracts of the Hyderabad and Nawabshah districts and everywhere else in the Province where lift irrigation is common, it is a well known fact that the existing inundation canals were not designed to irrigate more than about one-quarter of the areas which they command. One reason for this no doubt was that it was, as it still is, the belief of the officers best qualified to judge that lift lands require on an average a fallow period of three years. The Comissioner, therefore, respectfully submits that no case exists for the reduction, much less for the abolition of the fallow period on inundation canals in Sind. Indeed the balance of argument points rather to the necessity for abolishing the fallow rules in the opposite sense.

11. It is interesting, however, to consider what would be the effect of the reduction or abolition of the fallow period. In the case of a reduction the inevitable result would be that all the poorest and least favourably situated lands would gradually be relinquished, and there would be an enormous increase of cultivation at the heads of the canals attended by a corresponding decrease at the tails, and often no water at all would reach the tails. Such a result would be in sharp conflict with the present policy of the Irrigation Department of restricting cultivation at the head of a canal, in order that a fair share of the water may find its way to the tail. Government are doubtless aware that every legitimate means is being employed to this end such as the provision of submerged sluices and the reduction of the size of karia heads ; and that it is the steady policy of the Irrigation Department to discourage intensive cultivation at the heads of canals. The idea of abolishing the fallow period altogether scarcely calls for serious consideration. Except in the case of rice lands, the immediate result would be the relinquishment by the zamindars of at least two-thirds of their holdings, and in less than five years not a single acre would remain in their possession and the great majority of them would be completely ruined.

12. The Commissioner in Sind would therefore respectfully urge that the question of reducing or abolishing the fallow period may be quietly laid to rest until the advent of perennial irrigation in Sind, and that the fallow rules which have remained unchallenged for more than twenty years, and in the opinion of all Sind revenue officers have been completely successful may be left undisturbed.

APPENDIX F.

Statement showing details of fallow forfeited land, &c , during each revenue year since 1900-01.

Year.	District	Kabuli area.	Area assessed to fallow assessment.	Amount of fallow assessment due.	Fallow assessment recovered.	Area forfeited for non-payment of fallow assessment.	Forfeited area restored to original-holders or heirs.
1	2	3	4	5	6	7	8
		Acres.	Acres.	Rs.	Rs	Acres.	Acres.
1900-01 ...	Karachi	475,799 7	9,935 23	22,139 2	147 4	9,850 8	2,248 28
	Hyderabad	965,500 16	32,626 28	73,943 10	13,395 5	17,604 1	18,741 35
	Thar Parkar ...	1,006,569 22	Fallow	assessment first	levied in 1904-05.		
	Nawabshah	733,868 2	4,680 13	12,263 7	3,425 0	3,362 36	632 34
	Sukkur	642,192 26	3,862 17	11,748 12	6,552 14	1,425 30	..
	Larkana	989,119 24	10,110 25	31,782 12	4,105 13	8,735 8	1,721 4
	Upper Sind Frontier ..	804,778 28	7,007 27	16,199 14	3,852 2	4,924 21	1,704 32
	Total ...	15,617,428 5	68,223 13	1,68,077 10	31,478 6	45,902 24	25,049 13
1901-02 ...	Karachi	483,790 28	22,726 10	54,250 10	4,889 14	20,408 18	1,480 12
	Hyderabad	974,737 15	35,553 10	73,383 9	13,647 9	25,452 26	14,325 29
	Thar Parkar ...	1,084,360 19	Fallow	assessment first	levied in 1904-05.		
	Nawabshah	759,549 8	5,614 38	14,197 14	4,381 14	3,634 39	1,710 8
	Sukkur	662,086 30	7,988 24	23,361 13	11,474 11	4,061 15	387 37
	Larkana	981,350 18	9,153 32	23,034 15	4,122 8	7,090 1	1,217 30
	Upper Sind Frontier ...	798,379 20	3,835 18	9,066 8	3,095 2	2,461 30	3,077 20
	Total ...	5,744,254 18	84,872 12	1,97,295 5	41,611 10	63,109 9	22,199 16
1902-03 ..	Karachi	457,140 18	5,165 32	11,219 7	2,314 7	4,345 17	2,480 35
	Hyderabad	985,737 11	...	Not available	...	..	11,813 5
	Thar Parkar ...	1,149,973 17	Fallow assess	ment first levied	in 1904-05.		
	Nawabshah	805,172 31	...	...	...	..	2,179 35
	Sukkur	657,804 35	...	...	..	.	835 7
	Larkana	979,629 39	935 32	2,853 8	502 5	806 1	1,192 35
	Upper Sind Frontier ...	793,282 39	...	...	...	...	578 16
	Total ...	5,828,741 30	6,101 24	14,072 15	2,816 12	5,151 18	19,080 11
1903-04 ...	Karachi	456,330 1	3,298 34	7,973 11	410 5	3,143 36	2,398 18
	Hyderabad	1,004,139 22	16,470 6	37,057 6	10,118 11	6,388 15	11,196 24
	Thar Parkar ..	1,130,422 28	Fallow assess	ment first levied	in 1904-05		
	Nawabshah	940,190 26	4,337 34	10,463 11	1,284 3	3 833 27	1,510 2
	Sukkur	681,477 15	2,791 19	8,355 6	4,577 6	1,054 34	442 23
	Larkana	988,611 31	3,633 31	9,792 11	3,422 4	2,165 37	634 34
	Upper Sind Frontier ...	725,916 8	1,161 34	2,718 0	1,451 0	544 19	1,165 35
	Total ...	5,927,088 11	31,693 38	76,360 13	21,263 13	17,145 8	17,348 16
1904-05 ...	Karachi	457,725 28	5,442 16	13,230 10	1,339 7	4,918 8	2,736 29
	Hyderabad	1,034,356 12	19,934 1	42,730 7	7,896 7	12,580 19	10,059 8
	Thar Parkar ...	1,168,048 2	2,448 23	6,477 6	177 9	2,362 39	...
	Nawabshah	969,178 0	7,073 31	17,600 9	8,466 7	3,772 10	1,999 13
	Sukkur	684,522 11	10,376 4	31,399 1	23,313 6	2,864 8	481 39
	Larkana	958,772 17	8,482 4	19,749 12	7,722 12	5,415 25	827 34
	Upper Sind Frontier ..	725,483 24	1,749 35	3,816 1	2,064 7	813 29	1,072 14
	Total ...	5,998,086 14	55,506 34	1,35,003 14	50,980 7	32,727 18	17,177 17

Year.	District.	Kabuli area.	Area assessed to fallow assessment.	Amount of fallow assessment due.	Fallow assessment recovered.	Area forfeited for non-payment of fallow assessment.	Forfeited area restored to original holders or heirs.
1	2	3	4	5	6	7	8
		Acres.	Acres.	Rs.	Rs.	Acres.	Acres.
1905-06	Karachi	472,366 25	8,434 11	19,059 3	3,801 10	6,743 19	2,556 8
	Hyderabad	1,085,219 21	30,777 5	63,243 9	15,369 10	17,688 12	17,347 36
	Thar Parkar	1,238,345 7	3,338 8	9,671 11	4,733 12	1,607 21	589 5
	Nawabshah	1,038,409 9	31,169 11	77,032 2	19,725 8	24,246 22	4,224 39
	Sukkur	700,653 2	6,396 9	18,506 9	11,352 9	2,559 18	354 5
	Larkana	964,701 37	9,655 6	26,459 0	11,939 14	5,815 31	2,104 9
	Upper Sind Frontier	794,778 38	9,440 5	19,475 2	15,174 3	2,095 34	573 29
	Total	6,294,414 19	99,150 15	2,33,447 4	82,097 2	60,756 37	27,750 11
1906-07	Karachi	473,468 5	5,130 38	12,946 0	2,069 1	4,364 23	4,594 16
	Hyderabad	1,140,214 19	15,282 23	34,499 6	11,711 7	12,599 21	21,244 30
	Thar Parkar	1,254,449 26	7,115 20	24,407 14	6,536 11	5,117 31	369 5
	Nawabshah	1,086,582 38	9,607 15	25,012 13	8,562 15	6,783 39	6,464 8
	Sukkur	704,619 10	6,465 30	19,375 7	13,756 3	2,094 28	1,060 22
	Larkana	998,758 15	5,510 23	16,199 0	7,678 8	3,374 31	2,232 15
	Upper Sind Frontier	904,622 34	13,293 39	27,976 11	7,588 11	9,568 37	216 23
	Total	6,562,715 27	62,406 28	1,60,417 3	57,503 8	43,904 10	36,181 39
1907-08	Karachi	466,873 14	1,187 33	2,422 1	845 1	905 33	4,923 18
	Hyderabad	1,025,794 28		Not available.		7,645 5	9,756 11
	Thar Parkar	1,235,248 13	...	..	...	...	273 37
	Nawabshah	1,116,656 4	9,124 7	19,810 5	5,446 10	7,108 17	5,514 13
	Sukkur	719,867 39	2,279 26	5,983 2	3,659 1	774 3	353 39
	Larkana		F R.	Suspended.			369 35
	Upper Sind Frontier	906,482 23	9,990 2	20,804 4	11,309 5	4,526 25	245 15
	Total	5,470,923 1	22,581 28	49,019 12	21,260 1	20,960 3	21,437 8
1908-09	Karachi	536,798 0	635 34	1,395 12	74 8	604 21	3,791 32
	Hyderabad	1,069,481 1	22,575 5	49,598 9	24,682 0	3,692 36	7,347 4
	Thar Parkar	1,247,968 28	9,006 6	29,458 14	5,146 6	7,355 22	610 28
	Nawabshah	1,158,205 36	21,207 12	56,4 1 12	25,986 4	10,402 3	1,144 6
	Sukkur	747,909 32	7,258 34	21,084 12	16,003 10	2,169 39	944 13
	Larkana	1,020,052 0	5,274 12	14,494 14	8,190 4	1,919 7	1,250 10
	Upper Sind Frontier	911,667 21	11,407 17	25,334 0	12,050 11	5,081 23	876 6
	Total	6,692,082 38	77,365 0	1,97,335 9	92,133 11	31,225 31	15,973 19
1909-10	Karachi	527,960 17	758 9	1,787 10	506 4	507 19	3,461 3
	Hyderabad	913,166 26	18,875 28	45,082 2	24,953 14	9,990 13	4,555 29
	Thar Parkar	1,227,256 37	7,142 37	24,438 13	5,112 13	5,622 26	1,366 28
	Nawabshah	1,152,160 30	19,007 19	51,728 13	25,927 3	9,216 33	1,704 34
	Sukkur	734,622 7	6,643 10	20,301 8	14,420 6	1,760 26	361 34
	Larkana	988,745 24	4,402 19	13,697 1	6,279 11	2,404 8	1,208 29
	Upper Sind Frontier	909,932 3	7,476 23	16,678 5	9,708 5	3,084 39	1,017 39
	Total	6,453,844 24	64,306 25	1,73,714 4	86,908 8	32,587 4	13,676 36

Year.	District.	Kabuli area.	Area assessed to fallow assessment.	Amount of fallow assessment due.	Fallow assessment recovered.	Area forfeited for non-payment of fallow assessment	Forfeited area restored to original holders or heirs.
1	2	3	4	5	6	7	8
		Acres.	Acres.	Rs.	Rs.	Acres.	Acres.
1910-11 ...	Karachi ...	558,841 17	452 29	1,067 4	800 12	111 9	2,049 27
	Hyderabad ...	937,054 26	20,105 17	42,459 2	28,973 3	6,558 5	4,763 11
	Thar Parkar ...	1,226,239 37	12,193 16	41,078 2	12,695 6	8,688 35	2,203 11
	Nawabshah ...	1,166,322 23	11,826 16	42,223 15	20,052 8	7,469 29	3,807 35
	Sukkur	745,697 23	9,130 31	28,517 0	20,466 6	1,794 11	521 14
	Larkana	1,005,715 13	12,527 28	44,757 11	28,821 6	4,999 30	727 9
	Upper Sind Frontier ...	908,863 36	9,589 17	21,882 1	13,249 10	3,131 39	984 14
	Total ...	6,547,735 15	78,844 34	221,985 3	125,059 3	32,753 38	15,057 1
1911-12 ...	Karachi	548,379 22	1,101 25	2,566 10	946 8	530 36	1,588 3
	Hyderabad ...	1,064,623 32	23,213 22	47,928 8	27,107 5	6,894 14	3,739 12
	Thar Parkar ...	1,219,238 7	33,272 13	94,879 3	47,447 2	8,426 34	4,570 19
	Nawabshah ...	1,173,367 13	16,637 19	48,620 10	21,038 13	10,218 3	3,067 35
	Sukkur	729,004 38	6,938 35	19,785 12	12,463 5	2,306 10	628 19
	Larkana	976,449 22	8,775 13	27,857 1	18,031 10	2,258 28	916 3
	Upper Sind Frontier ...	883,110 37	14,283 38	34,058 5	5,680 4	3,173 30	1,106 11
	Total ...	6,594,174 11	104,223 5	2,75,696 12	1,32,714 15	33,868 35	15,616 22
1912-13 ..	Karachi	566,623 4	2,276 14	5,445 7	1,804 1	1,594 11	2,838 19
	Hyderabad ...	953,770 39	55,177 17	1,14,423 0	84,909 8	10,547 26	4,236 29
	Thar Parker ...	1,198,932 18	80,517 19	2,15,849 14	1,12,933 3	20,283 8	4,322 11
	Nawabshah ..	1,174,438 15	22,316 19	59,766 5	33,121 9	8,793 11	3,332 33
	Sukkur	739,998 30	495 2	1,282 0	964 15	111 25	450 38
	Larkana	999,151 28	15,061 20	45,006 12	34,521 15	2,357 15	1,091 28
	Upper Sind Frontier ...	885,393 23	3,389 16	7,548 14	3,430 4	1,590 0	460 22
	Total ...	6,518,308 37	197,233 27	4,49,322 4	2,71,685 7	45,277 16	16,733 20
1913-14 ...	Karachi	570,807 5	5,061 14	9,628 3	2,642 3	4,136 21	6,642 30
	Hyderabad ..	1,071,314 32	39,542 35	88,289 5	66,437 13	12,451 4	5,125 19
	Thar Parkar ..	1,201,591 20	79,982 26	1,71,383 7	86,391 2	16,988 21	5,921 22
	Nawabshah ...	1,191,352 9	25,041 5	72,475 1	35,581 3	12,831 25	2,621 37
	Sukkur	759,828 27	3,219 16	12,119 0	11,432 9	281 16	111 35
	Larkana	935,092 3	14,896 9	44,740 0	28,495 2	4,794 6	835 38
	Upper Sind Frontier ...	889,600 27	2,703 16	5,589 15	3,651 1	703 13	1,789 1
	Total ...	6 619,587 4	171,347 1	4,03,894 15	2,34,631 1	52,186 26	23,048 22
1914-15 ...	Karachi	598,653 14	9,042 37	17,570 3	3,012 8	7,828 35	3,630 24
	Hyderabad	1,097,310 7	44,426 35	96,032 1	59,376 0	12,255 16	3,097 21
	Thar Parkar ...	1,194,124 38	25,323 16	63,648 12	32,631 8	9,448 4	3,103 12
	Nawabshah ...	1,179,439 21	24,122 25	62,069 8	33,638 0	10,143 3	6,719 38
	Sukkur	755,559 23	7,065 1	21,955 7	16,445 8	2,036 38	137 38
	Larkana	1,159,868 4	11,991 17	37,568 4	22,940 11	4,147 17	570 18
	Upper Sind Frontier ..	907,714 30	8,417 4	18,085 15	12,603 7	1,638 8	1,682 35
	Total ...	6,892,670 17	128,389 15	3,16,930 2	1,80,647 10	47,498 1	18,342 26

Year.	District.	Kabuli area.	Area assessed to fallow assessment.	Amount of fallow assessment due.	Fallow assessment recovered.	Area forfeited for non-payment of fallow assessment.	Forfeited area restored to original holders or heirs.
1	2	3	4	5	6	7	8
		Acres.	Acres.	Rs.	Rs.	Acres.	Acres.
1915-16	Karachi	559,643 36	12,163 12	22,070 6	5,610 6	9,164 26	6,147 2
	Hyderabad	1,087,271 29	...	...	..	13,037 25	6,032 21
	Thar Parkar ...	1,191,374 14	22,457 8	62,373 15	26,454 1	9,263 2	6,526 20
	Nawabshah ...	1,169,946 33	25,794 36	69,144 1	44,303 5	8,849 37	1,555 18
	Sukkur	733,356 17	9,282 24	27,229 3	18,587 1	2,983 14	364 22
	Larkana	1,176,293 11	11,376 36	35,679 0	29,013 11	3,032 14	324 7
	Upper Sind Frontier ..	887,112 24	8,024 30	17,594 8	14,542 6	1,324 26	1,138 29
	Total ..	6804,999 4	89,099 26	2,34,091 1	1,38,510 14	47,655 24	22,088 39
1916-17	Karachi	587,477 27	6,102 9	15,257 1	4,131 15	4,922 29	1,293 16
	Hyderabad	1,058,105 18	31,516 29	72,460 1	46,785 8	7,885 32	7,471 12
	Thar Parkar ...	1,192,900 10	31,599 29	89,671 7	48,817 8	13,721 28	3,614 36
	Nawabshah ..	1,189,221 1	27,242 29	72,229 4	39,615 13	10,671 6	909 18
	Sukkur	756,371 23	6,209 5	19,572 15	11,992 8	1,847 6	444 7
	Larkana	1,121,485 15	7,254 36	22,025 5	13,850 0	2,449 26	893 5
	Upper Sind Frontier ...	899,751 7	6,858 15	16,239 3	11,110 12	1,754 16	2,675 24
	Total . .	6806,312 21	116,783 32	3,07,455 4	1,76,304 0	43,252 23	17,301 38
1917-18	Karachi	579,066 34	6,490 23	16,031 0	4,869 4	4,809 9	1,802 34
	Hyderabad	1,099,533 14	32,894 27	77,226 12	54,011 4	10,323 8	4,566 22
	Thar Parkar ...	1,189,982 11	42,498 15	11,392 15	69,023 2	14,871 3	3,076 3
	Nawabshah ..	1,193,391 28	27,970 32	76,384 1	43,941 8	11,663 32	899 34
	Sukkur	753,663 39	12,664 33	37,486 11	27,679 4	3,451 19	448 12
	Larkana	1,154,933 26	11,543 1	32,655 14	20,440 13	4,837 8	2,099 36
	Upper Sind Frontier ...	900,513 8	11,189 38	26,369 1	20,318 8	2,549 31	852 1
	Total ..	6,871,085 0	145,252 9	3,80,075 6	2,40,283 11	52,505 30	13,739 22
1918-19	Karachi	559,315 38	3,681 25	7,195 6	2,805 3	2,746 25	1,896 38
	Hyderabad	1,078,432 6	...	...	...	...	2,349 39
	Thar Parkar ...	1,172,899 29	...	...	...	...	2,594 6
	Nawabshah	1,157,847 4	Fallow rules	suspended.	...	...	65 4
	Sukkur	732,862 39	92 15	262 9	262 9	...	1,125 28
	Larkana	1,070,420 19	1,617 19	5,499 15	4,253 15	374 8	428 32
	Upper Sind Frontier ...	878,017 8	53 13	106 11	106 11	..	395 4
	Total ..	6,649,795 23	5,444 32	13,064 9	7,428 6	3,120 33	8,855 31
1919-20	Karachi	591,979 18	4,563 20	11,002 1	3,378 10	3,391 19	503 5
	Hyderabad	1,072,433 27	34,442 14	80,668 11	55,701 13	4,540 29	2,187 4
	Thar Parkar .	1,193,767 33	54,907 10	1,16,265 2	72,064 0	14,484 2	5,212 13
	Nawabshah ...	1,166,356 14	29,805 19	80,832 4	54,132 9	9,487 19	1,051 0
	Sukkur	749,907 10	7,468 28	23,453 12	16,141 3	2,260 13	147 21
	Larkana	1,085,804 6	8,307 27	26,580 15	18,670 1	2,566 33	1,261 6
	Upper Sind Frontier ...	888,997 26	7,933 25	18,011 6	13,204 13	2,259 13	1,594 9
	Total .	6,749,246 14	127,428 23	3,56,814 3	2,33,293 1	38,990 8	11,956 18

Year.	District.	Kabuli area.	Area assessed to fallow assessment.	Amount of fallow assessment due.	Fallow assessment recovered.	Area forfeited for non-payment of fallow assessment	Forfeited area restored to original holders or heirs.
1	2	3	4	5	6	7	8
		Acres.	Acres	Rs.	Rs.	Acres.	Acres.
1920-21	Karachi	583,241 19	...	...	...	...	854 11
	Hyderabad	1,076,800 29	14,708 2	34,659 11	26,882 11	9,652 17	2,262 19
	Thar Parkar	1,183,760 31	.	...	...	...	4,388 38
	Nawabshah	1,155,573 18		Fallow rules	suspended.		67 1
	Sukkur	746,991 38	201 26	609 2	609 2	...	715 2
	Larkana	1,078,694 19	6,499 12	20,903 12	17,350 14	1,014 16	1,076 12
	Upper Sind Frontier	891,005 37	5 12	7 5	7 5	...	535 36
	Total	6,716,068 31	21,414 12	56,179 14	44,850 0	10,666 33	9,899 39
1921-22	Karachi	591,719 39	2,846 20	9,309 0	4,452 2	1,254 27	214 25
	Hyderabad	1,075,834 23	36,540 38	78,439 9	57,194 13	9,055 22	2,535 32
	Thar Parkar	1,212,169 12	..	...	...	..	2,789 24
	Nawabshah	1,160,299 39	26,207 27	71,617 9	49,199 8	5,824 19	1,224 23
	Sukkur	755,980 13	9,312 39	26,676 6	19,503 7	2,603 26	1,726 30
	Larkana	1,105,011 37	10,431 3	31,615 1	23,064 12	3,082 13	1,000 0
	Upper Sind Frontier	892,818 10	8,886 1	20,341 10	17,486 1	1,330 39	1,155 38
	Total	6,793,834 13	94,325 8	2,37,999 3	1,70,900 11	23,151 26	10,647 12
1922-23	Karachi	587,854 15	4,014 25	11,278 8	2,946 12	3,095 5	1,937 11
	Hyderabad	1,067,493 27	39,986 26	93,849 7	71,521 1	12,036 22	3,320 12
	Thar Parkar	1,220,108 17	22,985 32	64,090 3	53,774 3	3,043 11	1,870 2
	Nawabshah	1,154,237 32	25,390 31	66,822 10	52,740 15	2,906 29	603 6
	Sukkur	764,291 33	9,568 26	22,092 15	15,002 5	2,521 8	1,744 7
	Larkana	1,078,517 24	10,662 32	31,144 5	28,946 11	1,249 14	1,360 24
	Upper Sind Frontier	887,231 5	6,612 12	14,659 15	12,499 4	570 27	876 8
	Total	6,759,634 33	97,221 24	3,04,837 15	2,37,431 3	25,422 36	11,711 30
1923-24	Karachi	591,297 31	4,215 9	11,572 15	4,800 1	2,651 20	2,550 7
	Hyderabad	1,066,331 8	30,063 32	78,874 7	47,334 10	7,733 34	3,918 4
	Thar Parkar	1,216,900 13	813 0	2,004 0	1,557 0	182 25	689 19
	Nawabshah	1,149,233 11	18,430 21	51,784 7	44,407 11	2,346 3	100 36
	Sukkur	766,079 9	7,048 23	22,421 3	18,842 9	1,144 20	680 33
	Larkana	1,052,210 20	10,228 1	29,753 15	26,670 15	1,082 6	1,046 12
	Upper Sind Frontier	893,365 33	8,857 15	21,187 4	19,977 15	522 37	89 14
	Total	6,735,418 5	79,656 21	2,17,598 3	1,63,590 13	15,663 25	9,075 5
1924-25	Karachi	598,838 28	1,228 19	3,554 7	1,820 8	...	2,310 24
	Hyderabad	1,081,814 28		Not	available.		11,380 21
	Thar Parkar	1,244,389 21		Fallow	rules suspended.		173 7
	Nawabshah	1,166,044 32		Fallow	rules suspended.		
	Sukkur	776,881 5	127 6	513 6	84 2	100 6	204 34
	Larkana			Fallow	rules suspended.		109 32
	Upper Sind Frontier	907,950 33	342 23	715 4	572 6	63 19	2,615 7
	Total	5,775,919 27	1,698 8	4,783 1	2,477 0	163 25	10,463 11

APPENDIX G.

Statement showing the tracts in which Fallow Rule 4 has been suspended (1) indefinitely, (2) until improvements have been effected and (3) for particular year or years from the beginning up to 1924-25.

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended.		Reasons for suspension in brief.	Period of suspension.			Remarks whether any other rule or rules also suspended.
	Taluka,	Area, whether suspension order covers the whole taluka, or only a number or dehs or particular land dependent on certain canal or section of it, i.e., within certain miles of the canals length.		Indefinitely.	Until improvements have been effected.	For particular year or years	
1	2	3	4	5	6	7	8
			KARACHI DISTRICT.				
1918-19 ...	..	Whole district ...	Deficient supply ...	..	...	1918-19 ...	Rule 1 also.
1920-21 ...	...	Do. ...	Do. ...	.	..	1920-21 ..	
1907-08 ..	Shah Bunder...	Whole taluka ...	Low inundation ...	...	.	1907-08 ..	
1908-09 ...	,, ..	Do. ...	Floods	...	..	1908-09 ..	
1910-11 ...	,, ...	Do. ...	Floods and heavy rains .	...	...	1910 11 ..	
1920-21 ..	,, ...	1 deh (Bulo Shalani) ...	Floods in one portion and deficient supply in another.	Indefinite ..	...	...	Rule 1 also.
1924-25 ...	,, .	7 dehs ...	Floods	Do. ..	..	...	Rule 1 also.
1902-03 ...	Mirpur Bathoro.	Whole taluka ...	Do.	...	...	1902-03 ..	
1904-05 ...	,, ..	17 dehs dependent on Ali Bahar Gang Bahar, &c	Chronic deficiency of water.	...	Until improvements.	...	
1907-08 ..	,, .	Whole taluka ...	Low inundation ...	...	...	1907-08 .	
1908-09 ...	,, ...	Do. ..	Floods	...	..	1908-09 ..	
1909-10 ...	,, ...	Do. ..	Do.	...	...	1909-10 ..	
1910-11 ...	,, ...	Do. ...	Floods and heavy rains...	.	...	1910-11 ..	
1918-19 ..	,, ..	Do. ...	Do. ...	..	..	1918-19 .	
1920-21 ...	. ...	Do. ...	Deficient supply ...	.	..	1920-21 ..	
1907-08 ..	Jati ...	Do. .	Low inundation ...	..	..	1907-08 .	
1909-10 ...	,, ...	Do. ...	Floods		..	1909-10 .	
1910-11 ...	,, ...	Do. ...	Floods and heavy rains .	. .	.	1910-11 ..	
1918-19 ...	,, ...	Do. . .	Floods	...	.	1918-19 ...	Rule 1 also.
1919-20 ...	,, ..	58 dehs	Do. . ..	...	..	1919-20 ..	Do.
1895-96 ...	Sujawal ...	Whole taluka ...	Deficient supply ..	...	...	1895-96 ...	Do.
1899-1900 ..	,, ...	Do. ...	Do. ...	...	...	1899-1900 .	Do.
1902-03 ..	,, ...	Do. ...	Do. ...	.	...	1902-03 .	
1904-05 ..	. ...	5 dehs dependent on Chouhatho and Gaja canals.	Chronic deficient supply.	...	Until improvements	..	
1907-08 .	,, ...	Whole taluka ...	Low inundation ...	..	...	1907-08 ..	Rule 1 also
1908-09 ...	,, ...	Do. ...	Floods	. .	...	1908-09 .	Do.
1910-11 ..	,, ...	Do. ...	Floods and heavy rains..	...	...	1910-11 ..	Do.
1911-12 ...	,, ...	Do. ...	Do. ...	... .	...	1911-12	Do.
1918-19 .	,, ...	Do. ...	Deficient supply ...	.	. .	1918-19 .	Do.
1919-20 ...	,, ...	42 dehs ...	Floods	...	...	1919-20 ...	Do.
1920-21 ...	,, ...	Whole taluka ...	Deficient supply ..	...	..	1920-21 ..	Do.
1899-1900 ..	Manjhand ...	Whole Mahal ...	Do.		.	1899-1900 .	
1902-03 ...	,, ...	Do. ..	Do.		...	1902-03 .	
1907-08 ...	,, ...	Do. ...	Low inundation ...	...	...	1907-08 . .	

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended:- Taluka.	Area, whether suspension order covers the whole taluka, or only a number of dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.	Reasons for suspension in brief.	Period of suspension. Indefinitely.	Until improvements have been effected.	For particular year or years.	Remarks whether any other rule or rules also suspended
1	2	3	4	5	6	7	8
			KARACHI DISTRICT—*concld.*				
1895-96 ...	Kotri ...	All rayati surveyed dehs excluding Barani dehs.	Floods	...	...	1895-96 ..	
1902-03 ...	„ ...	Do. ..	Do.	...	...	1902-03 ...	
1907-08 ...	„ ...	Do. ...	Low inundation ...	...	...	1907-08 ...	
1910-11 ...	„ ...	Do. ..	Drought	...	...	1910-11 ...	
1911-12 ...	„ ...	Deh (Guna) ..	Change of peech ..	Indefinite ...	...	...	
1895-96 ...	Karachi ...	Whole taluka ...	Deficient supply ...	...	...	1895-96 ...	
1899-1900..	„ ..	Do. ...	Do. ...	...	...	1899-1900.	
1902-03 ...	„ ...	Do. ...	Do. ...	...	...	1902-03 ...	
1907-08 ...	„ ...	Do. ..	Do. ...	...	...	1907-08 ...	
1903-04 ...	Mirpur Sakro ..	Do. ...	Do. ...	Indefinite ..	...	...	
1903-04 ..	Tatta ..	Do. ..	Do. ...	Do. ..	...	...	
1903-04 ...	Ghorabari ..	Do. ...	Do. ...	Do. ...	...	...	
			NAWABSHAH DISTRICT.				
1918-19 ...	...	Whole district ...	Bad inundation ...	...	...	1918-19 ...	Rule 1 also.
1920-21 ...	...	Do. ...	Do. ...	...	...	1920-21 ...	Do.
1895-96 ...	Shahdadpur ...	3 whole tapas and 10 other dehs.	Do. ...	...	...	1895-96 ...	
1899-1900..	„ ...	2 whole tapas and 14 other dehs.	Do. ...	...	..	1899-1900.	
1902-03 ...	„ ..	2 whole tapas and 13 other dehs.	Do. ...	...	...	1902-03 ...	
1904-05 ...	„ ...	1 deh (Kubayagun) ...	Do.	...	..	1904-05 ...	
1907-08 ...	„ ...	Whole taluka ..	Do. ...	...	...	1907-08 ...	
1913-14 ...	„ .	Parts of deh Sahta and Yaru Dahri.	Floods	...	Until the bund is constructed.	...	
1921-22 ...	„ ...	6 dehs	Deficient supply ...	..	...	1921-22 ...	
1924-25 ...	„ ..	5 dehs	Do. ...	..	...	1923-24 ...	
1891-92 ...	Sakrand ..	All land not irrigable from Dadwah.	Do. ..	...	Until improvements.	...	Rule 1 also.
1892-93 ...	„ ...	Do. ...	Floods in one portion and deficient supply in another.	Indefinite ...	...	...	
1913-14 ..	„ ..	113 survey Nos. of deh Jado Jumo.	Floods	...	Until protective bund is constructed.	...	
1915-16 ...	„ ...	2 dehs	Do.	..	Since 1911-12 until bund is constructed.	..	
1918-19 ...	„ ..	329 survey Nos. on Alibahar.	Do.	...	Since 1916-17 until bund is constructed	...	
1923-24 ...	„ ...	2 whole dehs and parts of 21.	Do.	Indefinite ...	...	...	
1907-08 ..	Nawabshah ...	Whole taluka ...	Deficient supply ...	..	...	1907-08 ...	
1915-16 ...	„ ...	Deh 1, 15 Nasrat ...	Do. ...	..	...	1915-16 ...	
1907-08 ...	Sinjhoro ...	Whole taluka ...	Do. ...	...	...	1907-08 ...	

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended.		Reasons for suspension in brief.	Period of suspension.			Remarks whether any other rule or rules also suspended
	Taluka.	Area, whether suspension order covers the whole taluka, or only a number or dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.		Indefinitely.	Until improvements have been effected.	For particular year or years.	
1	2	3	4	5	6	7	8
			NAWABSHAH DISTRICT—*concld.*				
1914-15 ...	Sinjhoro ..	4 dehs . ..	Deficient supply ...	...	.	1909-10 to 1914-15.	Rule 1 also.
1915-16 ..	,, ...	9 whole dehs and part of 1 on Dalore distributary.	Do. ..	..	..	Do.	Do.
1921-22 ...	,, ...	13 whole dehs and part of 1 on Dalore distributary.	Do. ...	...	...	1915-16 to 1922-23.	Do.
...	,, ...	39 dehs of Jamrao on outlet No. 3.	Do. ...	...	...	1920-21 & 1921-22.	
...	,, ...	All the remaining dehs of Jamrao.	Do. ..	...	..	1921-22 ...	
1923-24 ..	,, ...	Jamrao tract ..	Do. ...	...	...	1923-24 ...	
1899-1900 .	Naushahro ...	Whole taluka ...	Do. ..	...	.	1899-1900 .	
1902-03 ...	,, ...	Do. ...	Do. ..	..	...	1902-03 ...	
1907-08 ...	,, ...	Do. ...	Do ...	...	..	1907-08 ...	
1911-12 ..	,, ...	Lands on Nasrat, Chakar and Mahrabwah.	Do. .	..	...	1911-12 ...	
1913-14 ...	,, ...	Lands commanded by Chakar.	Do· ...	...	. .	1913-14 ...	
1914-15 ...	,, ...	Lands commanded by Hyderwah.	Do. ...	...	...	1911-12 ...	
1922-23 ...	,, ..	2 dehs Cheho and Aghan.	Do. ...	...	..	1920-21 & 1921-22.	
1915-16 ...	Moro ...	8 dehs	Floods	..	...	1914-15 & 1915-16.	
1920-21 ...	,, ..	Deh Shahpur ...	Do.	.	Since 1915-16 until protective bund erected.	...	Rule 1 also.
1891-92 ...	Kandiaro ...	31 dehs on Mahrabwah ..	Unsatisfactory irrigation.	.	Till improvement ..	...	Rule 1 also. Reintroduced from 1896-97.
1892-93 ...	,, .	Lands on Bahmanwah ...	Deficient water supply ..		-	1892-93 ..	Rule 1 also.
1894-95 ...	,, ..	Whole taluka ...	Do. ...		...	1894-95 ...	
1895-96 ...	,, ..	Do. .	Do. ...		...	1895-96 ...	
1896-97 ...	,, ...	Do. ...	Do· ...	.	..	1896-97 ...	
1899-1900 ..	,, ...	Do. ...	Introduction of irrigational settlement.	.	...	Upto 1904-05.	
1907-08 ...	,, ...	Do. ..	Deficient supply ..	.	...	1907-08 ...	
1909-10 ...	,, ..	15 dehs on Mahrab ...	Bad working of Mahrab .	..	Until improvement .	...	
1911-12 ..	, . .	Lands on Nasrat, Madad Lundo, Fatma, Mahrab, Gurkano, Radho and Bahmanwah.	Deficient supply ..	...	...	1911-12 ...	
1915-16 ...	,, ..	3 dehs	Do. ...	..	Until improvement .	...	Rule 1 also
1921-22 ...	,, ..	20 dehs	·Do. ...	...	...	1921-22 ...	
1923-24 ...	,, ...	5 dehs	Do. ...	.	...	From 1922-23 till the end of current settlement.	Do.
...	,, ..	4 dehs	Do. ...	...	...	From 1923-24 till the end of current settlement.	Do.

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended.		Reasons for suspension in brief.	Period of suspension.			Remarks whether any other rule or rules also suspended.
	Taluka.	Area, whether suspension order covers the whole taluka, or only a number of dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.		Indefinitely.	Until improvements have been effected.	For particular year or years.	
1	2	3	4	5	6	7	8
			THAR PARKAR DISTRICT.				
NOTE.—	Fallow Rules are not applicable to		Thar Parkar Division —				
1920-21 ..	...	Whole district ...	Deficient supply ...	..	..	1920-21 ...	
1896-97 ...	Mirpurkhas ...	Whole taluka ...	Unsatisfactory irrigation	..	Pending completion of Jamrao scheme.	...	
1907-08 ...	,, ...	Do. ...	Deficient supply ...	.	...	1907-08 ...	
1912-13 ..	,, ...	2 dehs ..	Unsatisfactory irrigation.	Indefinite ...	..	...	
1918-19 ...	,, ...	Whole taluka ...	Deficient supply ...	..		1918-19 .	
1921-22 ...	,, ...	Do. ...	Do. ...	..	.	1921-22 ...	
1923-24 ...	,, ...	Tract dependent on Jamrao.	Do. ...	...	..	1923-24 ...	
1907-08 ...	Digri ...	Whole taluka ...	Do. ..	...	...	1907-08 ...	
1909-10 ...	,, ...	Do. ...	Do. ..	..	..	1909-10 ...	
1918-19 ...	,, ...	Do. ...	Do. ...	...	...	1918-19 ..	
1921-22 ...	,, ...	Do. ..	Do. ...	...	...	1921-22 ...	
1923-24 ..	,, ...	Do. ...	Do. .	..	...	1923-24 ...	
1907-08 ..	Jamesabad ...	Do. ...	Do. ..	...	...	1907-08 ...	
1915-16 ...	,, ..	10 dehs	Do. ...	Indefinite ..	...	...	Reimposed in 1919-20.
1918-19 ..	,, ...	Whole taluka ...	Do. ...	...	...	1918-19 ...	
1921-22 ...	,, ...	Do. ...	Do. ...	.	...	1921-22 ...	
1923-24 ..	,, ...	Do. ...	Do. ...	...	...	1923-24 ..	
1912-13 ..	Khipro ...	15 dehs ...	Insufficient supply ...	Indefinite ..	...	...	All rules suspended.
1913-14 ...	,, ...	35 dehs	Deficient supply ...	.	Until improvement in Nara supply.	..	Fallow rules not applicable to 2 dehs of desert tract.
1915-16 ..	,, ...	6 dehs	Do. ...	...	Do. ..	...	
1919-20 ...	,, ...	5 dehs of Mithrao tract .	Do. ...	...	...	Period of settlement.	
...		87 dehs of Nara tract ...	Do. ..	...	Until construction of regulator on Khiprowah.	...	
1920-21 ...	,, ...	49 dehs	Do. ..	..	Do. ...	...	
1923-24 ...	,, ...	33 ,, ...	Do. ...	...	Do. ..	...	
1911-12 ...	Samaro ...	37 ,, ...	Low inundation ...	..	...	1911-12 ...	
1912-13 ...	,, ...	16 ,, ...	Deficient supply ...	Indefinite ...	...	...	All rules suspended.
1913-14 ...	,, ...	17 ,, ...	Do. ...	Do. ...	...	...	
1914-15 ..	,, ...	14 ,, ...	Do. ..	Do. ..	..	...	
1916-17 ...	,, ...	1 deh	Do. ..	Do. ...	..	...	
1917-18 ...	,, ...	32 dehs	Do. ...	...	Until improvement.	.	
1918-19 ...	,, ...	7 dehs	Do. ...	. .	Do. ...	...	
1919-20 ...	,, ..	3 dehs of Mithrao tract .	Do. ...	...	Until construction of regulator.	...	
...	...	42 dehs of Mithrao Nara tract.	Do. ...	...	...	Period of settlement.	
1920-21 ...	,, ...	Shakh Darelo tract ...	Do. ...	..	..	5 years ...	
1923-24 ...	,, ...	55 dehs	Do. ..	...	Until improvement .	...	

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended.		Reasons for suspension in brief.	Period of suspension.			Remarks whether any other rule or rules also suspended.
	Taluka.	Area, whether suspension order covers the whole taluka, or only a number of dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.		Indefinitely.	Until improvements have been effected.	For particular year or years.	
1	2	3	4	5	6	7	8
			THAR PARKAR DISTRICT—*concld.*				
1896-97 ...	Sanghar ...	16 dehs	Unsatisfactory irrigation.	...	Until completion of Jamrao scheme.	..	
1912-13 ..	,, ..	45 ,, ...	Deficient supply ...	..	.	1912-13 ...	Fallow rules do not apply to 22 dehs from beginning 1909-10.
1918-19 ...	,, ...	45 ,, ...	Do. ...	..	..	1918-19 ..	
1920-21 ...	,, .	45 ,, ...	Do. ...	.	...	1920-21 ..	
1921-22 .	,, ...	45 ,, ...	Do. ..	..	...	1921-22 .	
1923-24 ...	,, ...	45 ,, ...	Do. ...	..	Until improvement in Nara supply	...	
1896-97 .	Umerkot ...	10 dehs	Unsatisfactory irrigation.	..	Until Jamrao scheme completed.	...	
1907-08 ..	,, ...	53 ,, ...	Deficient supply ...	..	...	1907-08 ...	Fallow rules do not apply to 58 dehs from beginning. *i. e.*, 1907-08.
1912-13 ...	,, ..	33 ,, ...	Do. ...	Indefinite ...	.	...	
1918-19 ...	,, ...	53 ,, ...	Do. ..	...	..	1918-19 ..	
1920-21 ..	,, .	53 ,, ...	Do. ..	..	..	1920-21 .	
1921-22 ...	,, .	53 ,, ...	Do. ...		...	1921-22 ...	
1923-24 ...	,, ..	53 ,, ...	Do. ...	...	Until improvement .	...	
			UPPER SIND FRONTIER DISTRICT.				
1895-96 ...	.	Whole district ...	Deficient supply	..	..	1895-96 ...	
1902-03 ...	...	Do. ...	Do. ...	.	...	1902-03 ...	In Shahdadkot taluka, rules were suspended indefinitely.
1918-19 ...	..	Do. ...	Do. .	.	..	1918-19 ...	Do.
1920-21 ...	...	Do. ...	Do. ..	...	...	1920-21 ...	Do.
1890-91 ...	Shahdadkot ...	Whole taluka ...	Do. ..	.	10 dehs until improvement	Rest of taluka for 1890-91.	Rule ;
1899-1900..	,, ..	Do. ...	Do .	...	...	1899-1900.	
1902-03 ...	,, .	Do. ...	Do. .	Indefinite .	...	...	
1890-91 ...	Jacobabad ...	4 dehs	Do. ...	...	Until improvement .	...	Reimposed 1917-18.
1907-08 ...	,, ..	Lands on desert canal ...	Do.	...		1907-08 ...	
1911-12 ...	,, ...	Lands on Begari canal..	Do. ..		...	1911-12 ...	
1912-13 ...	,, .	Lands on Begari canal and Adiowah.	Do. ..	...		1912-13 ...	
1913-14 ...	,, ...	Lands on Adio, Unser, Nasir, New Gounspur and Tangwaniwahs.	Do. ...	..	...	1913-14 ...	
1899-1900 ..	Thul ...	Lands on desert canal ...	Do. ...	.	..	1899-1900 .	
1900-01 ..	,, ...	Lands on Desert and Unar	Do. ...	.	...	1900-01 ...	
1901-02 ...	,, ..	Do. ..	Do. ...	. . .	...	1901-02 ...	
1907-08 ...	,, ...	Do. ...	Do. ..	...	...	1907-08 .	
1911-12 ...	,, ...	Lands on Fall Rajwah ...	Do. ...	...	..	1911-12 ..	

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended.		Reasons for suspension in brief.	Period of suspension.			Remarks whether any other rule or rules also suspended.
	Taluka	Area, whether suspension order covers the whole taluka, or only a number of dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.		Indefinitely	Until improvements have been effected.	For particular year or years.	
1	2	3	4	5	6	7	8
			UPPER SIND FRONTIER DISTRICT—*concld.*				
1899-1900	Kashmore	Lands on desert canal	Deficient supply	...	...	1899-1900	
1900-01	„	Do.	Do.	...	...	1900-01	
1902-03	„	Lands on bund canal	Do.	Indefinite	...	...	
1907-08	„	Whole taluka	Do.	...	...	1907-08	
1911-12	„	Lands on Adiowah	Do.	...	...	1911-12	
1912-13	„	Do.	Do.	...	...	1912-13	
1915-16	„	Do.	Do.	...	...	1915-16	
1916-17	„	Do.	Do.	...	...	1916-17	
1917-18	„	Whole taluka	Do.	...	...	1917-18	
1919-20	„	Lands in 13 dehs on Adiowah.	Do.	...	Until improvement	...	Rule 1 also.
1899-1900	Kandhakot	Lands on desert canal	Do.	...	...	1899 1900	
1900-01	„	Do.	Do.	...	...	1900-01	
1911-12	„	Lands on 5th and 15th miles channels.	Floods ...	Indefinite	...	...	
..	...	Lands on Unerwah	Deficiency ...	...	...	1911-12	
1912-13	Kandhakot	Lands on Uner and Nasir.	Deficient supply	...	...	1912-13	
1913-14	„	Do.	Do.	...	...	1913-14	
1919-20	„	Lands in dehs on Adiowah.	.....	...	Until improvement	...	Rule 1 also.
			LARKANA DISTRICT.				
1907-08	Mehar	Whole taluka	Deficient supply	...	...	1907-09	
1915-16	„	23 dehs ...	Floods and deficient	Supply for ever from 1915-16.	...	...	Rule 1 also.
1915-16	„	Whole taluka	Deficient supply	...	...	1915-16	
1917-18	„	Do.	Do.	...	...	1917-18	
1920-21	„	3 dehs ...	Do.	...	...	1920-21	
1895-96	Labdaria	Whole taluka	Do.	...	...	1895-96	
1898-99	„	Do.	Do.	...	...	1898-99	
1899-1900	„	Do.	Do.	...	...	1899-1900	
1907-08	„	Do.	Do.	...	...	1907-08	
1918-19	„	Do.	Do.	...	...	1918-19	
From the time of settlement.	Kakar	43 dehs ...	Do.	Indefinite	...	...	
1913-14	„	Whole taluka	Floods and deficiency	...	...	1913-14	
1914-15	„	11 dehs ...	Floods ...	...	...	1914-15	
1915-16	„	33 „ ...	Deficient supply	...	...	1915-16	
1916-17	„	5 „ ...	Do.	Indefinite	...	...	
1917-18	„	15 „ ...	Deficiency and floods	...	...	1917-18	
1920-21	„	4 „ ...	Deficient supply	...	...	1920-21	
1923-24	„	28 „ ...	Do.	Indefinite	...	...	

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended. Taluka	Area, whether suspension order covers the whole taluka, or only a number of dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.	Reasons for suspension in brief.	Period of suspension. Indefinitely	Until improvements have been effected.	For particular year or years.	Remarks whether any other rule or rules also suspended.
1	2	3	4	5	6	7	8
			LARKANA DISTRICT—*contd.*				
1895-96	Warah	Whole taluka	Deficient supply			1895-96	
1899-1900	,,	Do.	Do.			1899-1900	
1902-03	,,	Do.	Do.			1902-03	
1907-08	,,	Do.	Do.			1907-08	
1912-13	,,	18 dehs	Do.	Indefinite			
1918-19	,,	32 ,,	Do.			1918 19	
1920-21	,,	4 ,,	Do.			1920-21	
1899-1900	Johi	Whole taluka	Do.			1899-1900	
1902-03	,,	Do.	Do.			1902-03	
1904-05	,,	Do.	Do.			1904 05	
1907-08	,,	Do.	Do.			1907-08	
1918-19	,,	Do.	Do.			1918-19	
1920-21	,,	Do.	Famine			1920-21	
1923-24	,,	Dehs dependent on black water Wahi Jabal.	Insuffciency of rain water.	Till next settlement.			
1892-93	Dadu	2 dehs	Uncertain inundation	Indefinite			
1899-1900	,,	Whole taluka	Deficient supply			1899-1900	
1902-03	,,	Do.	Do.			1902-03	
1907-08	,,	Do.	Do.			1907 08	
1915-16	,,	Certain survey Nos. of deh Sutaro	Floods	Indefinite			
1918-19	,,	Whole taluka except dehs Doaho, Dawachi, Kinghar, Nasari Parubi and Kacha Sita.	Deficient supply			1918-19	
1920-21	,,	Whole taluka	Do.	Till the current settlement period.			
1890-91	Sehwan	Manchur lands	Floods	Indefinite			
1895-96	,,	Whole taluka	Scarcity of water			1895-96	
1898-99	,,	Do.	Do.			1898-99	
1901-02	,,	Do.	Do.			1901-02	
1906-07	,,	Do.	Do.			1906-07	
1914-15	,,	Deh Chhach	Floods	Indefinite			
1916-17	,,	Whole taluka	Scarcity of water	Till the current settlement period.			
1895-96	Larkana	32 dehs	Drought			1895-96	
1898-99	,,	32 ,,	Do.			1898-99	
1899-1900	,,	32 ,,	Do.			1899-1900	
1907-08	,,	32 ,,	Do.			1907-08	
1918-19	,,	30 ,,	Do.			1918-19	
1898-99	Ratodero	29 ,,	Scarcity of water			1898-99	
1907-08	,,	Whole taluka	Drought			1907-08	
1911-12	,,	Do.	Do.			1911-12	
1912-13	,,	Do.	Do.			1912-13	
1918-19	,,	Do.	Do.			1918-19	

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended		Reasons for suspension in brief.	Period of suspension.			Remarks whether any other rule or rules also suspended.
	Taluka.	Area, whether suspension order covers the whole taluka, or only a number of dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.		Indefinitely.	Until improvements have been effected.	For particular year or years.	
1	2	3	4	5	6	7	8
			LARKANA DISTRICT—*concld.*				
1920-21 ...	Ratodero ..	3 dehs ...	Drought	...	...	1920 21 ...	
1921-22 ..	„ ...	1 deh ...	Do.	...	..	1921-22 ...	
...	„ ..	4 dehs ...	.....	...	Till current settlement.	...	
1911-12 ...	Mirokhan ..	Whole taluka ...	Deficient supply ...	...	...	1911-12 ..	
1912-13 ...	„ ...	37 dehs ..	Do. ...	...	...	1912-13 ...	
1913-14 ...	„ ...	7 „	Do. ...	..	...	1913-14 ...	
1918-19 ...	„ ..	55 „	Drought	...	...	1918-19 ..	
1920-21 ..	„ ...	14 „	Do.	..	.	1920-21 ...	
			HYDERABAD DISTRICT.				
1918-19 ...	...	Whole district ...	Bad inundation ...	...	...	1918 19 ...	
1902-03 ...	Hyderabad ..	Whole taluka ...	Deficient supply ..	...	...	1902-03 ..	
1906-07 ..	„ ...	2 dehs on Ashahadwah...	Do. ..	...	Until improvement.	...	
1907-08 ...	„ ...	Whole taluka ...	Do. ...	...	...	1907-08 .	
1915-16 ...	„ ..	Do. ...	Do. ..	...	...	1915-16 ...	
1915-16 ..	Hala ...	Do. ..	Do. ...	...	...	1915-16 ...	
1920-21 ...	„ ...	24 dehs	Do ...	...	...	1920-21 ...	
1923-24 ...	„ ...	Portions of 4 dehs ...	Do. ...	...	..	1923-24 ..	
1896-97 ...	Tando Allahyar	Whole taluka ...	Do ...	...	...	1896-97 ...	
1902-03 ..	„ ...	Do.	Do. ...	..	. . .	1902-03 ...	
1904-05 ...	„ ...	Do.	Do. ...	...	..	1904-05 ...	
1907-08 ...	„ ...	Do.	Do. ...	...	...	1907-08 ...	
1915-16 ..	„ ...	Do	Do. ...	...	...	1915-16 ...	
1920-21 ...	„ ...	Do.	Do. ...	..	...	1920-21 ..	
1921-22 ...	„ ...	29 dehs	Do. ...	..	...	For 10 years	
1923-24 ...	„ ...	68 „	Do. ..	...	Pending completion of the Barrage.	..	
1889-90 ...	Guni ...	Whole taluka ...	Bad inundation ..	..	...	1889-90 ...	
1895-96 ...	„ ...	Do. ..	Do. ...	...	...	1895-96 ..	
1899-1900.	„ ...	Do. ...	Do. ...	..	...	1899-1900.	
1902-03 ...	„ ...	Do. ..	Do. ..	. .	...	1902-03 ...	
1907-08 ...	„ ...	Do. ...	Do. ...	...	...	1907-08 ...	
1909-10 ...	„ ...	Certain lands in 5 dehs affected by Budka Takar breach.	Breaches	...	...	1909-10 to 1914-15.	
1910-11 ...	„ ...	30 dehs	Do.	Until lands have sufficiently recovered.	...	...	Reimposed in 7 dehs in 1922-23
1917-18 ...	„ ...	7 dehs	Deficiency	...	...	1917-18 to 1919-20.	Rule 1 also.
...	...	1 deh (Dadkero) ...	Do.	...	Until improvement..	...	
1918-19 ...	„ ..	2 dehs	Do.	..	.	1918-19 to 1919-20.	Rule 1 also.
1920-21 .	„ ...	109 dehs	Do.	...	..	1920-21 ..	
1923-24 ...	„ ...	1 deh	Do.	...	...	5 years ...	
...	...	7 dehs	Do.	...	Until improvement..	...	

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended.		Reasons for suspension in brief.	Period of suspension.			Remarks whether any other rule or rules also suspended.
	Taluka.	Area, whether suspension order covers the whole taluka, or only a number of dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.		Indefinitely.	Until improvements have been effected.	For particular year or years.	
1	2	3	4	5	6	7	8
			HYDERABAD DISTRICT—*concld.*				
1895-96 ...	Badin ..	Whole taluka ...	Deficient supply ...	...	...	1895-96 ..	
1899-1900..	„ ...	67 dehs	Do. ...	...	...	1899-1900.	
1902-03 ..	„ ...	Whole taluka ...	Do. ...	...	...	1902-03 ...	
1914-15 ..	„ ...	Lands settled on Kaziawah old (10 dehs).	Do. ...	.	...	1914-15 to date.	
1920-21 ...	„ ...	27 dehs	Do. ...	...	...	1920-21 ...	
1921-22 ...	„ ..	7 „	Do. ...	...	...	1921-22 ...	
1923-24 ...	„ ...	3 „	Do. ...	...	Until improvement..	...	
1895-96 .	Tando Bago ...	Whole taluka ...	Do. ...	...	...	1895-96 ...	
1899-1900 .	„ ...	Do. ...	Do ...	...	...	1899-1900.	
1902-03 ...	„ ..	Do. ...	Do. ...	...	..	1902-03 ...	
1907-08 ...	„ ...	90 dehs	Do. ...	..	...	1907-08 ...	
1911-12 ...	„ ...	59 „	Non-clearance of the canal system.	...	...	1911-12 ...	
1912-13 ...	„ ...	20 „	Deficient supply ...	...	...	1912-13 ..	
1915-16 ...	„ ...	19 „	Do. ...	...	. .	1915-16 ...	
1919-20 ...	„ ...	28 „	Do. ...	...	...	1919-20 ...	
1920-21 ...	„ ...	70 „	Do. ...	...	..	1920-21 ...	
1921-22 ..	„ ...	25 „	Do. ...	...	...	1921-22 to 1923-24.	
1895-96 ...	Dero Mohbat...	66 „	Do. ...	...	...	1895-96 ..	
1899-1900..	„ ...	50 „	Do. ...	...	...	1899-1900.	
1902-03 ...	„ . .	53 „	Do. ...	..	...	1902-03 ...	
1907-08 ...	„ ..	64 „	Do. ...	...	...	1907-08 ...	
1915-16 ...	„ ...	44 „	Do. ...	...	..	1915-16 ...	
1920-21 ...	„ ...	92 „	Do. ...	...	...	1920-21 ...	
1923-24 ...	„ ...	56 „	Chronic deficient supply.	...	Until the current settlement period.	...	
			SUKKUR DISTRICT.				
1911-12 ...	...	Whole district ...	Poor inundation ...	...	...	1911-12 ..	
1918-19 ...	...	Do. ...	Do. ..	...	...	1918-19 ..	
1920-21 ...	...	Do. ...	Do. ...	...	...	1920-21 ..	
1895-96 ...	Sukkur ...	Whole taluka ...	Deficient supply ...	..	...	1895-96 ...	
1899-1900..	„ ...	Do ...	Do. ...	...	...	1899-1900.	
1902-03 ...	„ ...	Do. ..	Do. ...	..	...	1902-03 ...	
1907-08 ...	„ ...	Do. ...	Do. ...	...	...	1907-08 ...	
1912-13 ...	„ .	Do. ...	Do. ...	...	...	1912-13 ..	
1895-96 ..	Shikarpur .	Do. ...	Do. ...	...	...	1895-96 ...	
1899-1900.	„ .	Do. ...	Do ..	..	...	1899-1900.	
1902-03 ...	„ ..	Do. ..	Do. ...	...	...	1902-03 ...	
1907-08 ...	„ ..	Do. ...	Do. ...	...	...	1907-08 ...	
1912-13 ...	„ ...	Do ...	Do. ...	...	...	1912-13 ...	

Year in which the suspension order was passed.	Tract in which fallow rule 4 was suspended.		Reasons for suspension in brief.	Period of suspension.			Remarks whether any other rule or rules also suspended.
	Taluka.	Area, whether suspension order covers the whole taluka, or only a number of dehs or particular land dependent on certain canal or section of it, *i.e.*, within certain miles of the canals length.		Indefinitely.	Until improvements have been effected.	For particular year or years.	
1	2	3	4	5	6	7	8
			SUKKUR DISTRICT—*concld.*				
1895-96 ...	Garhi Yasin ...	Whole taluka ..	Deficient supply ...	...	..	1895-96 ...	
1899-1900 ..	,, ...	Do ...	Do. ...	..	...	1899-1900 .	
1902-03 ...	,, ...	Do. ...	Do. ...	...	..	1902-03 ...	
1907-08 ..	,, .	Do. ..	Do. ...	...	...	1907-08 ...	
1911-12 ...	,, ..	9 dehs	Deficient supply in Drakhanwah.		Till improvement of water supply in Drakhanwah *ex* Begari canal.	...	
1912-13 ...	,, ...	Whole taluka ..	Deficient supply ...	...	...	1912-13 ...	
1922-23 .	.. ...	4 dehs	Do. ..	...	..	3 years ..	
1895-96 ...	Rohri ...	Whole taluka ...	Do. ..	...	...	1895-96 ...	
1899-1900 ..	,, ..	Do. ...	Do. ...	...	...	1899-1900 .	
1902-03 ...	,, ...	Do. ...	Do. ...	...	...	1902-03 ...	
1907-08 ...	,, ...	Do. ..	Do. ...	..	...	1907-08 ...	
1912-13 ...	,, ...	Lands dependent on Janibwah and Garkanowah.	Do. ...	...	.	1912-13 ..	
1915-16 ...	,, ...	4 dehs	Floods	Indefinite ...	...	...	
1904-05 ...	Pano Akil ...	Whole taluka except dehs of tapa Mahrapur.	Deficient supply ...	Do. ...	...	...	
1912-13 ...	,, ...	All remaining dehs ..	Do. ..	...	..	1912-13 ...	
1922-23 ...	,, ...	All dehs of tapa Mahrapur.	Deficient supply in Maherowah.	...	Till improvement of Maherowah.	...	
1904-05 ..	Ghotki ..	51 dehs	Deficient supply ..	...	Till improvement in water supply.	...	
1912-13 ...	,, ..	Lands on Mahesarwah ...	Do. ..	...	...	1912-13 ..	
1902-03 ...	Mirpur Mathelo	Whole taluka ...	Do ...	..	...	1902-03 ..	
1912-13 ..	,, ..	Do. ...	Do. ..	...	...	1912-13 ...	
1915-16 .	,, ...	9 dehs	Failure of water supply .	...	.	1915-16 ...	
1916-17 ..	,, ..	17 dehs	Deficient supply ...	...	..	1916-17 & 1917-18	
1923-24 ...	,, .	Lands dependent on Mahiwah, Daharwah, Sonanwah and Darhar branches Nos. 1 and 2.	Do. ..	...	...	1923-24 ...	
	,, .	1 deh	Do. ..	Indefinite ...	...	...	
1896-97 ...	Ubauro .	Whole taluka ...	Do ...	..	...	1896-97 to 1903-04.	
1912-13 ...	,, ...	Do. ...	Do. .	..	...	1912-13 to 1914-15	
...	,, ...	Lands dependent on Seharwah.	... ..	...	Till improvement.	...	
1915-16 ...	,, ...	Whole taluka ..	Deficient supply ..	...	...	1915-16 ...	
1916-17 ...	,, ...	32 dehs	Do. ...	...	...	1916-17 & 1917-18 .	
1923-24 .	,, ...	Whole taluka ...	Do. ...	...	...	1923-24 ...	

Report of the Non-Official Members

OF THE

Fallow Rules Committee.

L (iv) 235-13-a

REPORT.

Introductory.

In pursuance of a Resolution passed by the Bombay Legislative Council on 19th July 1925, the Government were pleased to appoint Messrs. Hudson, Covernton, Lane and the undersigned as the members of the Fallow Rules Committee—

"(1) to examine the existing (Fallow Rules generally and to make any recommendations they may think proper for their modification, revision or repeal:

(2) more particularly to consider the question of the restoration, to the original holders, of lands forfeited under the rules, the conditions on which such restoration should be made, to what extent, if any, such holders have a lein on lands so forfeited, and what interpretation has been placed upon the rules by successive Commissioners in Sind."

We have carefully considered the mass of evidence before us; we have given every thought to all that the official as well as non-official witnesses have urged; and after fully discussing the subject with some of the foremost witnesses who were sent for oral evidence, we beg to report as under :—

Fallows: An essential feature of Sind agriculture.

1. In Sind, fallows are an inseparable accident in the industry of its agriculture. Before the conquest of the Province in 1843, the Amirs used to levy a share of the produce of the cultivated land only. That which lay fallow paid no tax to the rulers. The climate, the soil and the only source of irrigation supplied by the river Indus, made fallows necessary; and no ingenuity or toil of man could avoid this necessity. Despite this consensus of opinion in the past on the question of fallows, we invited the opinions of zamindars, officials and experts, as to whether fallows were still necessary in Sind; their answers both written and oral, which need not be reproduced here, establish the proposition that, in Sind, for a variety of reasons, land generally cannot be cultivated continuously from year to year, and has to be left fallow, in order that its fertility may be restored. There are soils and soils. Again some land is cultivated by means of the river-water, which flows over it through the canals There is some land to which water has to be lifted, by the aid of Persian wheels. Very little land is irrigated from the wells or on rain-water, but whatever the source of irrigation, land in Sind does not and cannot bear annual cultivation, (without manure; and manure is scarce) and has to be left fallow, may be for a short period or may be for years together, according to its situtation, quality and water-supply. We therefore hold that fallows must be recognized, for the present, as an essential feature in the industry of agriculture in Sind.

Land tenure in Sind, Zamindari.

2. The question as to the liability of the land, that lies fallow, to a tax or to a rent, must necessarily take us to the custom which prevailed in the days of the Amirs and in the early days of the conquest, before the present fallow rules were imposed upon the land-owning classes in Sind in the year 1887. The examination of the fallow rules therefore involves the examination of the Land Tenure in Sind, both in the days of the Amirs as well as in the days of their successors, the British Government. By what name was this tenure called? Was it called Rayatwari or Zamindari? Both these terms are not terms of modern nomenclature, but of ancient times. They are both of pre-British origin. Their connotation and denotation were as well known in pre-British days as in the present days. We venture to affirm that as in the Deccan the system was known and called Rayatwari, in Sind the system was purely that of zamindari.

3. At the time of the conquest the British Government found in Sind a larged body of Jagirdars, Zamindars and Cultivators. Jagirdars were the alienees of the land revenue from the Amirs; Zamindars the proprietors of the land; and Cultivators, the labourers, who were brought to work on the land by the zamindars.

4. The Jagirdars who paid their homage to the British Government, in the person of Sir Charles Napier, were confirmed in their Jagirs. The Zamindars who owned the land paid a share of their produce (battai) as land tax to the British Government, in the same way as they did to the Amirs, and were left in possession and enjoyment of the land they held. The cultivators were, mostly tenants at will and received, as their wages, a share of the produce from the zamindars and owed no duty direct or indirect to the State.

5. This was the state of affairs which the British Government found at the time of the conquest, in the main, and this is the system which is still in force inspite of the attempts which have been made to "adapt" the Bombay system to Sind, by the addition of executive orders, circulars and rules, sometimes over-riding and sometimes altering the provisions of the Bombay Revenue Code. Attempts have recently been made to style zamindars as occupants in official registers, but the unalterable fact remains that the zamindar is a zamindar still, the man who pays land tax to Government, and gets the land he owns cultivated by the *hari* who has nothing to do with the Government. The tenure was in pre-British days zamindari and is still in fact zamindari, howmuchsoever it may be hidden under a different terminology.

Tenure: Evidence of British Officers of the conquest days.

6. In this connection, the evidence of British officers in the early days of the conquest, who devoted care and thought to this subject, is very valuable. The following excerpt from the note printed at page 112 of the Selections from Government Records, Series XVIII of 1855, signed by Mr. A. Young, speaks for itself:—

> Page 128. "The mode of land tenure in Sind is very simble, well adapted to the exercise of individual enterprise and the investment of capital in improvement, and it is very desirable that the revenue system should conform to it. It is in fact nearly the same as tenure of land in England, with the exception that the land is all subject to the payment of "khiraj" or tax to Government. The first and universal land-tax was in all probability a share of the produce, and even when this was commuted for a fixed amount, it could only be paid from land that was cultivated. This is precisely the condition of land in Sind. Cultivated land is the property of private individuals, to whom in many instances, it has been handed down by their ancestors for countless generations. It is theirs to cultivate, to sell or to mortgage or bequeath to their children and subject only to the payment of the tax. It has been objected that the amount of the tax being at the discretion of the Government, reduces the land-owner to the state of a tenant, and constitutes the Government landlord; but except in so far as Government is absolute, the tax could not be legally raised above what was legal under the previous rulers, and so far from this being done, the tendency is all the other way, and a permanent settlement would remove this objection for over."

Rights of jagirdars and zamindars distinguished.

7. Mr. Young then goes on to clear the confusion between the right of jagirdars and zamindar and points out that jagirdars were merely alienees of land revenue, the owner of the land being the zamindar. This is how he concludes this subject. "The land-owner in Sind is called the zamindar. The zamindars are almost all Mussalmans but Hindu capitalists occasionally become purchasers, and still often hold land in mortgage."

8. After concluding his observations on the tenure of land, Mr. Young goes on (page 137, para. 97). "It would be impossible in Sind to levy anything, however small, on any but cultivated land, that is, on the cultivation; so that the only question to be settled is, what are the capabilities of the soil when cultivated, and we get rid of the question of how long the land is likely to lie waste or fallow."

9. Sir Bartle Frere, who was the second Governor and the first Commissioner of Sind, after Sir Charles Napier had retired from the Governorship of the Province, wrote in 1855 as follows :—

Sir Bartle Frere's opinion on land tenure.

> "The ordinary tenure in Sind is that of a zamindar or land-holder, who exercises wholly or in part *the privileges of the land-owner*. The extent of such privilege varies, according to custom, from that of *an absolute proprietorship of the land*, subject to the payment to Government of whatever may be the customary Government share of the produce, down to that of an ill-defined and often disputed claim to levy a lapa or rent on all cultivated land Sometimes the zamindar is also the cultivator or the cultivator is removeable at the zamindar's pleasure, the cultivator is quite independent of the zamindar."

10. The first survey of Sind lands ordered by Sir Bartle Frere, was a '*rough*' one. The orders and instructions with reference to this rough survey are contained in the above volume. This rough survey was popularly known as 'Thakbust'; and in the registers of this survey, the tenure of the zamindars was inserted as zamindari, under the column of ownership.

Rights registered in the first survey.

11. The word occupancy was unknown in those days; it has for the first time come in use after the Bombay Land Revenue Code of 1879. In all Surveys and Settlements which were tried and changed from time to time in Sind, prior to 1887, the zamindars were entered in the Registers not as occupants but as owners. In the pattas granted in 1867, the words were "Zamindar" and "Zamindari" "the land that is yours" (*vide* Sind Law Reporter, Volume VII, page 174) It has never been contended that the Bombay Land Revenue Code, was passed with reference to the tenure of land in Sind. On the contrary it was passed only for the Presidency and its provisions have been applied to Sind later with many alterations and reservations, by the issue of executive orders, admitting that the conditions of Sind tenure are totally different from those of the Presidency proper.

The term 'occupancy' introduced after 1879.

12. Sind having been placed under Bombay, its administration had of necessity to be placed in the hands of the officers whose earlier career and training had all been acquired in the Presidency. They came to Sind prepossessed in favour of the Deccan system, and so deeply were they steeped in the notions ingrained in them by the working of the rayatwari system of the Deccan, that they found it difficult to believe that another system could show superior advantages. There is a long correspondence printed by Government in a selection entitled "Papers relating to Revenue Survey in Sind" which, when read patiently, gives a deep insight into the controversy carried on with the Government of India with regard to the suitability of the different systems of settlement to Sind. It is a volume exceeding 500 and odd quarto pages, and contains very valuable information on the entire subject of land tenure in Sind. The letter No. 1417, from the Government of India, dated the 14th February 1865, to the Government of Bombay is of special interest. Para. 19 of this letter is worded as follows :—

The opinion of the Government of India on the land tenure in Sind.

> "The Governor-General is anxious that the tenures of land in Sind should be carefully ascertained and settled on their merit, both as regards the conflicting interest of different parties and their connection with the State. *He has little doubt but that proprietary rights in the soil do exist throughout that Province, and that it only requires the application of knowledge and experience of the subject to develop and record them.*" (The italics are ours).

13. The Bombay Government, however, refused to apply the requisite knowledge and experience, and went on blundering and changing and chopping the settlements in Sind, first trying one settlement, then another and yet a third, until they found that they had made such a sorry mess that

The minute of the Honorable Mr. Gibbs on the application of the Bombay Land Revenue System to Sind.

the Honourable the Board consisting of His Excellency the President, the Honourable Mr. Rodgers and the Honourable Mr Gibbs, put their heads together to extricate the zamindars from the ruin which the various settlements in Sind had brought upon them. The minutes recorded by the members of the Honourable Board in the year 1874 are extremely illuminating. We m ke no apology for giving below the following passages from the minute of the Honorable Mr. Gibbs, page 527 of the above compilation—

> "We found men, called zamindars, holdi g very large estates, of which only a portion was cultivated, and on which they paid a revenue in kind obtained by "battai" or division of the crop, a plan which in its integrity had the benefit of taking only assessment on what was actually produced by the soil. In practice however, the system led to fraud from the zamindar to the lowest menial employed . . . . . According to our Deccan system we have, I understand, cut up his estate into fields convenient for survey numbers, and after making allowance for fallows, we placed an assessment on the whole estate. The zamindar has undertaken to pay this, light as the survey officers consider it, viewed from a Deccan point of view, but simply *ruinous* to the owner, owing to his inability to cultivate more than a portion of it—an inability which in my opinion is mainly caused from the scanty population of the Province, which prevents more than a certain portion of it being brought under cultivation . . . . . We are in fact revolutionizing the revenue system of the Province and are trying to apply to large holdings a scheme which was intended only for rayatwari small holdings, and hence the great difficulty of the case. Could we blot out what we have done as regards the large holdings, and begin afresh, it would be the easier task, but this, I presume could not be done."

Rates levied on cultivated land only

14. The upshot of this conference was at first a great hesitation as to what to do under the circumstances. Accordingly His Excellency ordered a further consideration, and further minutes were written, and eventually on the 10th March 1875, the Government of Bombay issued a resolution by which the 'fallow diffused' settlement which had ruined the zamindars was abolished and *full rates were levied on cultivated land only.*

Zamindars formerly paid no tax upon fallow land : Opinion of Major Francis.

15. We think we have said enough to make it clear that Sind tenure is zamindari as distinguished from rayatwari. We do not wish to make this report intricate by reviewing at length the various incidents of the zamindari tenure, but will confine our attention to the rights of zamindars over fallow lands, or lands on which no cultivation has been done for years together. In the days of the Amirs zamindars paid no demand upon fallow land. In support of this statement, we have been referred to para. 11 of Major Francis, Memorandum, dated 26th December 1862, printed at page 18 of the "Selections from the Records of the Government No. CXCIV, New Series, Part I," which we reproduce below :—

> "Captain Haig's assertion that it was not the custom of the former rulers to remit the Government demands, because the land lay fallow, is scarcely correct. No rent whatever was levied from land, when fallow, by the late Amirs of Sind. Under their battai system, their revenue was derived solely from cultivation, being a share of the actual produce of the year; and as the zamindars retained their rights over uncultivated lands, it seems to me that fallows were recognized under such a system."

This was written sixty-four years ago, when only about 20 years had elapsed after the conquest, and events were fresh in the minds of the people; and there can be no imaginable reason for disputing the correctness of this statement.

Fallows under Sir Bartle Frere's Rough Survey and Settlement.

16. The system of battai was followed by the British for several years, after the Conquest, when the battai share was commuted into cash payment. It is quite safe to say that in the early days of the British rule, the exemption of fallow

land from the state demand was a recognized practice. Some years later, *i.e.*, in 1855, Sir Bartle Frere attempted to introduce into Sind "A Rough Survey and Revenue Settlement." This Rough Settlement and Survey merely recorded the shape and boundaries of the estates of the zamindars, and ascertained the amounts of revenue payable by them in respect of those estates.

Fallows under "The Fallow-diffused Settlement." System ruinous to Sind Zamindars and therefore abandoned.

17 The rough or thakbust settlement was succeeded by the fallow-diffused settlement. The essence of this settlement was in the words of Sir Henry Evans James (*vide* page 569 of the Commissioner's old circular book) that "assessment was fixed at a rate that would allow for fields necessarily lying fallow. Thus if the assessment on a field when cultivated was Rs. 4 per acre, and two fallows were needed, the annual assessment presumably payable was fixed at Rupees ÷ 3."

18. We have shown above, how this system led to the ruin of the zamindars and how it was abolished in 1875. To quote Sir Henry Evans again "it was therefore decided on the recommendation of a committee assembled in Sind, at which a member of the Bombay Government and the Commissioner in Sind were present, to abandon this system and to adopt a system which left fallows out of account, rendering the area comprised in each survey number liable to the payment of full rates fixed on it *when cultivated.* (*Vide* Government Resolution No. 1438, dated 10th March 1875)." In confirmation of this arrangement, a rule was framed which is printed at page 572 of the abovementioned book. It runs as fallows :—

> "Under the Temporary Settlement, assessment will be levied on cultivated numbers only."

19. A settlement is more or less a contract between the Government and the zamindars and the sanctity of a contract cannot be too much emphasized. In 1875, the levy of the demand of the State was confined to a full rate on cultivated land only, thereby exempting fallow land altogther from payment of any demand. This was a contract, and its validity was even affirmed in the year 1884, under the following circumstances.

Introduction of "Temporary Settlement"—Fallow rules set aside.

20. It was in contemplation to create certain privileged estates and the Commissioner in Sind, under the promise which he had made of submitting his proposals regarding this privileged class, was called upon to report on the matter. Mr. Erskine in his letter No. 3068, dated the 1st of August 1884, reported as under :—

> "Since the question was first taken into cosideration the system of survey has been much modified, and at present what are for convenience called temporary settlements have taken the place of the former regular settlements. Under the new settlements, *assessment is leviable on cultivated numbers only, all restrictions and fallow rules being set aside.* This system it will be seen makes every estate to a great extent a privileged estate, and it confers on all, one of the most valuable privileges I proposed formerly for a few only."

For this reason, Mr. Erskine wrote "to recommend that for the present at all events nothing more need be done. Should the recently introduced settlements become general in Sind, the need for privileged estates would pass away." The Government of Bombay concurred and in their Resolution No. 6836, dated the 25th August 1884, and dropped the question of privileged estates.

Fallow rules re-imposed three years later.

21. In clear and unambiguous terms "all restrictions and fallow rules were set aside" in 1884, and yet we find, that only in three more years' time, this solemn promise was set aside, and the local officers like Colonel Anderson and Colonel Haig, advanced specious arguments and the Bombay Government, in utter forgetfulness of what they sanctioned in 1875 and reaffirmed in 1884, re-imposed

the fallow rules on the zamindars of Sind. The sanctity of the contract, and the faith on which the creation of privileged estates was abandoned were no matter for consideration.

22. It may then be considered to be clearly established that up to the year 1887, the fallows in Sind never paid any rent or tax in cash or in kind to the British Government, or to the previous rulers, the Amirs of Sind.

Fallow rule No. 4.

23. For the first time, the demand on fallow land of assessment was made when the fallow rules were passed in 1887 and rule 4 of these rules made a full year's assessment payable in the fifth year, failure of which payment entailed a forfeiture under section 150 of the Bombay Land Revenue Code. This innovation was most certainly in the nature of an encroachment upon the rights of the zamindars. It does not appear that any zamindars were consulted or their consent was taken to the imposition of this additional burden or the curtailment of their right to hold the fallow land rent-free. Nor have we been referred to any correspondence from which a justification for taking fallows could be inferred. It is possible that on the basis of the State being the owner of the soil in the Bombay Presidency, and the holder of the land being merely a rayat paying rent for his occupation, a demand for rent of land occupied but not cultivated might be justified. Such a justification is altogether absent in a zamindari tenure, under which the zamindar is the owner of the soil and the settlement made with him guarantees him an immunity from assessment over fallows.

24. The introduction of fallow assessment in the year 1887 was therefore not just and not in keeping with the high standard of morality which respects vested rights and given pledges, and which is the distinguishing feature of the British rule in India. In this connection we will invite attention to the evidence of Mr. Vastiram Dialmal, Deputy Collector of Mehar (page 38 of the printed book of evidence), who has very ably and succinctly stated the case with an independence of mind which is very refreshing and which we have sadly missed in most official witnesses. Mr. Vastiram concludes his observations as follows :—

> " I regard the fallow rules therefore to be an innovation of 1887 only, and as such opposed to the oldest usages and good policy."

Results of the working of rule 4.

25. We shall now discuss the results which have flowed from the enforcement of the fallow rules during the last 39 years. From the contents of the Historical note appended to the circular of fallow rules, we gather that the object of the fallow rules was to prevent land grabbing on the part of the zamindars and to promote the extension of cultivation. The Secretary of the Committee has, at our request, compiled a statement for the last 20 years, showing the area that has, in each year, been forfeited to Government in default of payment of fallow assessment, and of the cash amounts that have been paid to Government as fallow assessment, in order to escape the forfeiture clause. We should have preferred to have a complete statement, not for 20 years only, but for the entire period of 39 years, that is to say from the year 1887 down to the present day. However the figures of the past twenty years are a fair index of what must have happened in the previous nineteen years. It is unfortunate that even the figures of some of the Districts in certain years, out of these twenty, are altogether missing, and therefore we cannot give here the exact totals of these twenty years. The figures however such as they are, show that fully 777,000 acres have been forfeited to Government and almost 32 lakhs of rupees have been paid into the Government Treasury to save the lands from forfeiture. If we were to supply the missing figures of certain districts on the system of averages, we shall be well within the mark, if we put the total of forfeited area to 10 lakhs, and the amount paid to save the forfeiture at rupees 40 lakhs.

Forfeiture figures appalling.

26. These figures are apt to give any one a pause. In one word they are appalling. No Government which has the good of the land owning classes at heart, can contemplate with composure, the transfer of enormous quantities of land from private ownership to the

ownership of the Crown. We doubt very much if the framers of the fallow rules could have an inkling of the havoc which these rules would play with private property. A tree is to be judged by the fruit it bears. The fallow rules, while enacted with an ostensible and declared object of preventing land grabbing on the part of the zamindars, have enabled Governmbnt to grab the land of private owners, not to any negligible extent, but to an enormous extent. This one fact is sufficient to condemn the fallow rules and to throw into the shade any plausible or special arguments which their apologists may advance.

Recommendation for abolition of fallow rules.

27. *We are clearly and definitely of opinion that the fallow rules, whatever their legality, must be abolished,* for in their actual working for the past 40 years, they have been found to be nothing better than a confiscatory measure. They carry their own condemnation.

Reasons why zamindars are compelled to let their lands be forfeited.

28. We have been at some pains to find out why it is that land-owners after a vain struggle to save their lands from forfeiture, have at last been compelled to let them go. Why is it that they did not or could not cultivate them? In the questionnaire drawn up by this Committee, questions were framed to elicit answers to this phase of the case. The answers to these from all zamindar witnesses and many official witnesses may be summed up in six words "want of water and of labour." Both these facts are outside the control of the zamindar. Labour has a tendency to concentrate where there is water, and water is, in the case of lift lands, hardly one-third of what is required for the total area. Mr. Hamid A. Ali says "it should be presumed unless the contrary is proved that, when lands were forfeited, the occupant was helpless, owing to lack of water level or capital." Mr. Taunton, Collector of Hyderabad, says "delay in applying for restoration is frequently due to causes beyond a zamindar's control, such as lack of money, labour or water-supply." We fail to imagine, what wisdom there is in penalizing zamindars for causes which they cannot control.

29. Superficial witnesses have attributed the fault to zamindars, and have called them lazy; some have said that if the rule 4 of the fallow rules, were not there, the zamindar would not be urged to make the best use of his land. It is a sort of whip, the dread of which make the zamindar alert. This sort of argument has no force whatever, There is no greater incentive than an economic force to human industrialism. Good water-supply and good land can never be neglected, in these hard days of struggle for existence. While hundreds of adventitious aids, like the fallow rule 4, will not make water-less lands fertile, they can only inflict hardship and misery.

Mr. Giles' opinion on fallow rules.

30. Mr. Giles, the Collector of Shikarpur, showed a true insight into and a correct appreciation of the situation when he wrote:—

> "Nor from this unpopular measure is there, I would respectfully submit, any corresponding advantage to be gained, for I firmly believe that except where interference is justified by the occupants' want of energy or means, and where far simpler rules could be applied, Government will never be a rupee richer by the retention of the fallow rules; and this because the cultivation of land is guided by economic laws, with which it is mischievous to interfere and because a survey number will inevitably be cultivated as soon as it has come within the margin of cultivation, *i. e.*, the condition where it will pay the cultivation."

Fallow rules suspended practically for whole of Sind.

31. Moreover the fallow rules are practically dead. Their operation has been suspended by the Commissloner-in-Sind over 5,266 villages out of the total of 5,363 villages, which comprise the entire Province. Only in 97 villages, these rules are at present in force. The Commissioner-in-Sind has suspended them because consistent with the existing supply of water, the utmost limit of cultivation has been reached. There is no room for further extension. This is a clear admission of the principle that when there is no water to spare, there can be no compulsion to cultivate fallows. Is it worth-while to flog this dead horse any more? We think the fallow rules are practically dead by the effect of time.

32. The fallow rules have caused many searchings of the heart, not only amongst the zamindar class, but amongst several administrative officers who knew the inner working of these rules. Mr. Giles who was an Assistant Collector for many years, and who served as Collector in every district of Sind and who rose to be Commissioner-in-Sind was altogether opposed to the spirit of the fallow rules. Sir John Muir Mackenzie, than whom few abler officers have been at the head of the Sind administration, fully contemplated the abolition of the fallow rules. He wrote in 1904 as follows :—

Opinions of Sir John Muir Mackenzie and other officers on the working of fallow rule 4

> "In a bad year, the operation of rule 4 is always suspended and in a good year when all the land is pretty certain to be cultivated for which water is available, there should ordinarily be little occasion to enforce it. The forfeiture of time expired fallow lands is moreover merely nominal, since forfeited lands are almost always given back to the original proprietors. The amount of revenue is not large compared to the total revenue of the Province The abolition of the rule too is likely to result in an appreciable saving of work all round."

Among the officers whom Sir John consulted, Mr. J. L. Rieu and Sirdar Mahomed Yakub were in favour of the abolition, but the others were against it and in this conflict of opinion, Sir John hesitated to take action forthwith. He wrote "I remain largely unconvinced."

> "There is something unsound in a rule which you are always having to suspend and the operation of which you constantly nullify by giving back the forfeited land to the original owners after excusing them from paying arrears of fallow assessment. All the exceptions and discretion allowed must provide innumerable opportunities for palm greasing and every one admits the system causes a great deal of work. I believe land-grabbing could be easily checked by charging, when it was suspected, a handsome malkano, and I strongly suspect that where we get more revenue from fallows we find there is most difficulty in finding water and haris, *e. g.*, in lift lands and in a badly supplied district like Sukkur. That Mr. Mules should give such a hesitating opinion in favour, that Mr. Rieu should be so largely against retaining the rules and that Sirdar Mahomed Yakub should be glad to see them abolished far more than half the cultivated area, greatly impresses me. Against the general opinion that the zamindars acquiesce fairly contendedly, I regard as of great weight the Sardar's opinion that the fallow rules are the most unpopular feature of our revenue administration. But I have not the time to make up my mind and I commend the matter to my successor for consideration and I make no promise to leave this here undisturbed after I return to the country."

It was a misfortune that Sir John Muir Mackenzie did not return to the country and the fallow rules ran on. Every word that Sir John wrote is worth its weight in gold and has our hearty approval. Twenty-two years have passed since then, much water has flowed under the bridges, a great scheme for revolutionizing the irrigation has made a start, the furthest limit of cultivation on inundation canals has been reached, the fallow rules have been suspended on 98 per cent. of the villages of Sind and if Sir John Muir Mackenzie had been in Sind, or at the Government House at Bombay (he was acting Governor of Bombay for a time) he would no longer hesitate, but let the fallow rules go once for all.

33. It might be of interest here to quote from the minute which the Honorable Mr. J. L. Rieu wrote on the subject in 1905. Mr. Rieu's career has been almost entirely made in Sind. There is not a Sub-division in Sind in which he has not served as Assistant Collector and there is no district of Sind in which he has not worked for years together as Collector. His views therefore could not

The Honorable Mr Rieu's minute.

under any circumstances be lightly passed over. The whole of his minute is worth reading, and we make no apology for reproducing it here.

Mr. Rieu wrote as follows :—

"2. I attach for your perusal a copy of the report submitted by the Assistant Collector of Larkana which puts the case for the retention of the rule clearly and forcibly and urges practically all that can be said in its favour. The Assistant Collector of Sewhan takes the same view and uses much the same arguments.

"3. Personally after giving the matter much consideration I am inclined to believe that the necessity of the rule in its present form no longer exists, and that without altogether discarding the principle that a zamindar must at stated intervals pay assessment on his land or suffer in default its forfeiture to Government, the degree of stringency with which that principle is enforced can without detriment and with considerable advantage be to a great extent relaxed. I think that too much weight is generally given to the stock arguments in favour of the rule that it operates as a check on the acquisitive tendencies of zamindars and as a stimulus to indolent and indifferent cultivators. Certainly the former of these considerations is not one that need be taken in to account in this District, which has for some years lain under a general embargo against the giving out of new land, when that embargo is ultimately removed in consequence of extended facilities for irrigation, it is certain that the new areas thrown open to cultivation, will be eagerly exploited, and that neither check nor stimulus will be required to enable Government through the zamindar to derive the utmost benefit from their cultivation.

"4. What, it seems to me, is not sufficiently realized is that conditions in Sind are undergoing a gradual but very appreciable change. Pressure on the land is yearly increasing. Sind is no longer a country of vast tracts of almost virgin soil. Simultaneously with this development there has been a raising of the general standard of living, and an increase in the pressure of competition. A zamindar, if he is to keep his head above water, must cultivate as much land as he can and as often as he can. If he does not he goes to the wall and his land passes into the hands of others more capable or strenuous than him.

"5. I am inclined to think that if the truth were known it would be found that the Fallow Rules are not infrequently more injurious in their action than salutary. Zamindars are extraordinarily tenacious of their ancestral lands and will endure heavy losses rather than submit to seeing them lapse out of their possession. Inferior lands are cultivated at a loss or are burdened with the payment of fallow assessment in obedience to these sentimental considerations, with the result that their owners are driven into debt. On the other hand in the case of the indolent zamindar who habitually neglects to cultivate his land, it is by no means certain that the rules are capable of producing their desired effect. The penalty which he incurs under them is inadequate amounting as it does to nothing more than the payment of one year's assessment, should he at any time desire to resume the land or be compelled to do so in order to keep out an outsider. The penalty is the same whether he has wilfully allowed the land to lie uncultivated for 10, 15, or 20 years, or on the other hand has merely through an unforeseen difficulty, such as inability to get haris, or a dispute about water supply, or any other cause beyond his control but not officially recognized as such, allowed the prescribed fallow period to be exceeded by a single year.

"6. I have been much struck with a suggestion made by Mr. Sadikali, the Deputy Collector of Mehar, for modifying rule 4 of the fallow rules. He describes it as follows :—

"My own suggestion is that the fallow period should be concurrent with the period of settlement in each taluka at the termination of which all the survey numbers allowed to remain fallow throughout the entire period may be forfeited and disposed of afterwards in the same way as other Government waste land. Any survey numbers taken up and not cultivated within the last five years of the settlement period, may be allowed a fresh lease of the fallow period in the succeeding settlement. This system will do away with the preparation of lists of fallow numbers and other procedure necessitated every year. The necessary record will have to be prepared only once on the termination of the period of a settlement and its preparation may be entrusted to the officer who is to write the settlement report of the taluka. Its preparation will not impose much labour upon the taluka office and the establishment of the officer preparing the settlement report as they have to collect information for the report for the whole period from the village and taluka books and while collecting that information, they can easily prepare lists of fallow survey numbers also. The Settlement Officer, may also while inspecting the conditions of the various dehs in the taluka, ascertain and briefly note the causes which led to the numbers having remained uncultivated. These notes will be most useful in disposing of the numbers when applications are made for them".

"7. It seems to me that the above proposals are sound and practical, and might with advantage be adopted. They do not involve the total abandonment of the rights of Government over land that has long remained uncultivated and consequently unremunerative from the point of view of the revenue, but at the same time they modify the rigidity and eliminate the undesirable features of the existing system. They possess moreover one great positive advantage in that they do away at one stroke with the enormous expenditure of time and labour which the working of that system entails."

Mr. Bhurgri's effort for the repeal of the fallow rules.

34. In 1913, the Honorable Mr. Bhurgri did his level best to have these rules abolished. He moved the Government and the Government called for a report from Mr. Lucas, but the latter officer submitted an adverse opinion using no real argument, but the old, old stock argument of unnecessary sacrifice of revenue and the withdrawing of an impetus from impoverished zamindars, and the Government did not do what it might have done even then. As we observed before, there has been a great deal of difference between what we see today and what we saw 13 years ago. Events have moved very fast and the old order must change and the new take its place.

Sindhi Zamindars owning ancestral lands affected by fallow rules.

35. We might as well advert here to the opinion of certain zamindars of the Jamrao Canal, *viz.*, Mr. Sundersing and Bakshi Darshansing who represents and speaks on behalfs of his association. While it is open to any zamindar to submit his views to the Committee, we must point out that the Jamrao zamindars from whom the application of fallow rules has been expressely excluded (*vide* the heading of the fallow rules excluding their operation from lands held under Act III of 1899) have absolutely no knowledge or experience as to how the fallow rules haved worked. To this disqualification they add another, *viz.*, that these zamindars are Punjabis and not Sindhis and consequently not in sympathy with them. These Punjabis were settled on the Jamrao for the first time after the canal was opened and possessed no ancestral lands which they could lose under the fallow rules. Even in their own time as no fallow rules govern a majority of them, they could lose no land which they got without payment.

In one word, they do not know the pinch of the fallow rules at all and we cannot attach any value to their opinion even from an academic point of view, for the Punjabi Sardar class is not known for possessing any giant intellectuality.

Recommendation : Fallow rules be abolished both in the Barrage and non-Barrage area.

36. Our friends in the minority cannot recommend the application of the fallow rules to the Barrage area, for it is impossible to foresee under what conditions the cultivation in Barrage will take place. This is a very correct appreciation of the situation. But we think that the same consideration and the same standard of judgment should apply to the area outside the Barrage where the fallow rules have been suspended because the last limit of cultivation has been reached. When new improvements are made and more water is supplied, there will be time to consider under what conditions the additional cultivation will start. It is not possible to foresee these conditions now. Nor are we even at the initial stage of knowing what improvements to canals or what new canals are under contemplation. To keep fallow rules for an unknown purpose and for unknown conditions is scarcely less inadvisable in non-Barrage areas than in those of the Barrage.

37. As we recommend the total repeal or abolition of the fallow rules, we regard it a waste of time to alter a word here or there or to clothe them in more euphemious language. We do not think that this Committee has collected read, heard and digested enormous evidence, literature and statistics to merely make verbal alterations. That would be labour wasted and energy misspent.

Rule No. 3.

38. It has been pointed out to us that if rule 3 of the fallow rules did not exist every survey number in Sind would have to pay an annual assessment, whether cultivated or not under the provisions of section 45 of the land Revenue Code, and the concession which this rule makes to the Zamindar class, would be automatically withdrawn, to their very great projudice. We regret we are not able to agree in this view. Section 45, which we reproduce here for facility of reference, cannot rightly be construed in this manner. It only enacts that all land whether applied to agriculture or other purpose (such as building, mining or quarrying) is liable to pay revenue to Government. It only fixes a liability and this liability is incurred when it is applied to some purpose (whatever it may be). Land lying fallow is not applied to any purpose and therefore incurs no liability. Moreover, section 45 clearly exempts from liability all land *under the provisions* of any special contract with Government. There is a fundamental contract between the Zamindars and the Government under the "Irrigational" settlement that only cultivated land shall bear assessment. section 45 therefore is an authority in itself for holding that the land which is lying fallow is not under the settlement contract in Sind to pay any assessment, for the essence of Irrigational settlement is "cultivate and pay.' Further it has to be borne in mind that the liability under section 45 is not annnal. That liability has to be laid down by rules to be enacted hereafter. It may be that the rules in this behalf have not yet been made by Government. We have tried to look for them in the latest edition of Sathe's Land Revenue Code edited by Mr. Joglekar, but have been unable to discover them. Section 214 of the Land Revenue Code, clause (b), enables Government to make rules for "regulating the assessment of land to the land revenue." It is open to Government either under this Section, or section 45 to make consistent rules for Bombay and for Sind separately, laying down that in Bombay the assessment shall be paid every year on agricultural land whether cultivated or not, and in Sind only when the land is actually cultivated. It is possible that in order to make a rule like that, consistent with the section, the section itself may require some modification, for if liability is incurred when land *is applied to a purpose* it is difficult to see that even in the Presidency proper, a rule, making assessment recoverable on fallow land, would be a consistent rule. However that may be, so far as Sind is concerned, it is for the Government of Bombay to make a rule levying assessment on land when cultivated, and not for the Commissioner-in-Sind to make that rule in his circular orders. Powers legally conferred have to

Section 45. "All land whether applied to agricultural or other purposes, and wherever situate, is liable to the payment of land revenue to Government according to the rules hereinalter enacted except such as may be wholly exempted under the provisions of any special contract with Government or any law for the time being in force."

be legally exercised and as the power of making a rule is not capable of delegation, the existence of such a rule in the Commissioner's Circulars, is to say the least of it anomalous.

Rules 1 and 2.

39. Rules 1 and 2 of the present fallow rules do not really pertain to fallow lands, and should have no place where they have been pitchforked. These two rules apply to grants of new land primarily, and should have their place in Circular No. 45 relating to "land grants." These rules have been made applicable in the second instance only to fallow lands regranted, but even as such, it is a matter of "land grant" and not a matter of "fallow forfeiture" or fallow assessment. The first rule is popularly known as "nakashto" rule, and as it applies primarily to new grants of land, it should be transferred there. We have no objection if this nakashto rule is applied to the regranted or restored fallow forfeited lands as well, with the amendment suggested by our collegues of the minority, but it should go over to the rules in Circular 45

Rule 2. The present rule is:—
2. "If in any year an occupied survey number appropriated for the purposes of agriculture is not cultivated but the occupant of such number makes a profit out of his occupancy by sale of fish, grass, fodder, timber fuel or other product of such number, the Collector shall at his discretion levy a part or the whole of the assessment on the number."

40. Rule 2 as stated above is not a fallow rule at all. A mere reading of it will stisfy any one as to the truth of this remark. We do not believe that any appreciable revenue accrues to Government under it. No figures have been supplied to us to show what its worth is. It only serves to give facilities for corruption among revenue subordinates. However it is not a subject of a fallow rule, but of grant of land and it had better go there, if it is at all worth retaining.

Fallow rule No. 7. modified without proper sanction.

41. Rule 4 is the principal rule and as we recommend its abolition, we see little good in discussing the rules which follow it, for they all hinge on rule 4. In passing, we might make a mention of rule 7 which relates to remission of fallow assessment. In parallel columns, we reproduce the rule as originally framed and sanctioned by the Government of Bombay and as amended by the Commissioner in Sind, without the sanction of the Government.

ORIGINAL RULE.	AMENDED RULE.
7. Nothing in rule 4 shall be held to debar a number which having paid no assessment for four consecutive years, is cultivated in the fifth year in participating in any general remissions to which the occupant may be otherwise entitled under the ordinary remission rules. These rules do not however apply to uncultivated numbers liable to assessment under rule 4 of the fallow rules, the assessment on which must ordinarily be levied in full, or the number forfeited, as therein provided. The single case in which an exception may be made and remission allowed is when it can be shown that owing either to want of water or to other causes beyond the control of the occupant, it was not possible to cultivate the number in the fifth year.	7. (1) In the case of survey numbers liable to fallow assessment if there are circumstances which render it impossible to cultivate the survey number during the kharif and rabi (including adhawa) seasons in the fifth year, liability to fallow assessment may be postponed under the orders of the Collector to the following year. (Then follow 8 more clauses of this rule, regarding the date of application, the procedure to be followed on receipt of the application, the opinions of Executive Engineer, the inspection by the Mukhtiarkar, appeals to Sub-Divisional Officers and several other details.

42. It will be noticed that the old rule made provision for two sets of circumstances, first when the S. No. was cultivated in the fifth year, and second when the S. No. could not be cultivated in the fifth year, owing to causes beyond

the control of the landholder. In the first case, remission was to be given as in all other ordinary S. Nos. In the second case, the zamindar could not be penalized without inflicting an unmerited injury and therefore as an exception, provision was made for remission of fallow assessment. The rule as recently amended by the Commissioner, takes away the protection given in the first case and substitutes postponement for remission in the second case. We see little reason in refusing remission of assessment, when in the fifth year, a zamindar has made an honest attempt at cultivating a field by ploughing it up, using a quantity of seed, and raising water to it. Why should his misfortune of having his crop destroyed by extraneous causes be added to by the refusal of a remission which he can get on his other fields as a matter of course. In the second case in which no cultivation could be made even in the fifth year for reasons beyond the control of the zamindar, even our official colleagues are of opinion that a mere postponement for a single year is not sufficient. Postponement should be given, they say, from year to year. Our objection to the course suggested is that repeated applications for postponement, mean repeated opportunities of corruption among revenue subordinates, &c., &c. The illegal gratification known as *lapo* of Tapedars has passed into a proverb, and inspite of numerous pious resolutions of the Government, it flourishes undiminished in the whole of Sind. The application for postponement from year to year, would most certainly add to the evil of corruption which has become notorious in Sind, and we cannot possibly recommend a system which offers facilities for black-mailing the zamindars. We may add in conclusion that we have discussed this rule, on its merits, but as we are for the total abolition of all fallow rules proper, this rule will have to go along with others.

RESTORATION.

43. In discussing the question of the restoration of the fallow forfeited lands, we are at one with our colleagues of the minority that a distinction ought to be observed between lands situate within the Lloyd Barrage area and the similar lands outside it. We are however unable to agree as to the terms on which the restoration should be made.

Restoration in the non-Barrage area.

44. *In the non Barrage area the restoration should be made, in our opinion, to their original holders or their heirs without any limit of time.* While non-official witnesses insist upon this course, even the official witnesses like Messrs. Taunton and Hamid A. Ali, the two Collectors representing the revenue administration, and Mr. Vartak, the Chief Engineer in Sind, representing the Irrigation Department are of opinion, for which they give sound reasons, that no limit of time need be imposed. We are glad that in this view, our friends of the minority also agree, though their reasoning may differ from ours. The terms on which the restoration should be made, in our opinion are the old terms, *viz.*: on payment of a "Malkano" equal to one year's assessment. There is some difference between the members of the Committee as to the amount of this payment. Our friends of the minority wish to levy a malkano equal to 2 assessments on lands forfeited more than ten years before the *bandash*. While we recommend one uniform rate for all, whether forfeited within 10 years or beyond 10 years. It seems to us that a double assessment is unnecessarily harsh and has never been demanded up to this time. No man who knows the conditions of Sind life, will for one moment infer any intention of abandonment from long period forfeitures. A country where water is not sufficient even for one-third the area and where there is a chronic deficiency in many parts, 10, 20 or even 30 years is no matter for making distinctions. During the 83 years of British rule, no irrigational work of any magnitude has been undertaken by Government. What significance can be attached therefore to a period of ten years? It is no fault of zamindars if there has been no water since the conquest, and the squeeze of a double assessment will be regarded as an unjustifiable demand.

45. Unfortunately a complication has arisen out of the bandash or restriction imposed on most canals of Sind, which has been interpreted to mean not only restriction on grants of fresh land, but on the regrant of fallow forfeited land as well. This interpretation is, we think, harsh and unnecessary. Fallows stand

altogether on a different footing. Fallow forfeited numbers are a part and parcel of at one time *kabuli* land, which was classed and assessed and the right of which to draw water from a particular canal, called *peech* is entered into the survey registers and Records of Rights. Their restoration should not be refused, simply because of restriction on grants of fresh unclassed and unassessed land imposed by the Irrigation Officers. We therefore recommend that outside the barrage area forfeited and relinquished lands be restored immediately on payment (or without payment, as may appear just to the Collector) of not more than one year's assessment, without refefence to the time when such land became fallow forfeited to their original owners or heirs.

Restoration in the Barrage area: recommendation.

46. With regard to the fallow forfeited lands within the Barrage area we are at one with our colleagues of the minority that it is only equitable that Government, having brought a perennial supply to the land, which was most probably forfeited because of want of water, should receive a fair compensation for this additional advantage. The Barrage water is expected to be perennial as distinguished from seasonal. This will add very materially to the value of the forfeited land and by all canons of justice and fair-play, the owner to whom the land is restored should have it on terms different from those governing other ordinary lands on ordinary canals. This view is equally shared by our colleagues of the minority, but the difference between us lies as to the payment on which the restoration should be made.

47. While we are anxious to lay down the amount of this payment, our colleagues wish that this amount should not be determined now, but should be left to Government officers to be determined in the proportion of 75 per cent. with reference to the favourable terms that may be offered to " Mohagdars," if the lands were forfeited within 10 years of the imposition of restriction, and 150 per cent if the forfeiture took place more than ten years before. Our reply is that we have it already on record that Government intend to give *Mohag* lands at the rate of Rs. 15 per acre. The speech of Sir Chimanlal Setalwad, Member of the Executive Council of the Government of Bombay, on the 8th June 1923 leaves no room for doubt upon it. We might as well quote it here.

> " There is anxiety in certain quarters about what is known as the mohag rights of zamindas. It is far from the intention of Government to ignore these traditional rights in the policy of land sales to finance the project. All genuine cases where the injury would be done by selling lands adjoining present holdings will be and are fully considered, and Government have set aside no less than 350,000 acres or 25 per cent. of unoccupied land to be sold at the extremely low figure of Rs. 15 per acre."

48. It is agreed by all the members of this Committee that the case of owners of fallow-forfeited lands is altogether on a better footing than the case of Mohagdars and that is the reason why our official friends propose 75 per cent. of the rate fixed in the case of Mohagdars. We wish to point out that since Government have laid down in 1923 that the rate to Mohagdar should be Rs. 15 per acre, it should be laid down now what the rate in the case of the restored lands should be. We recommend that it should be fixed at Rs. 10 per acre. This makes it 66 per cent. of the Mohag rate. If we make it 75 per cent. of the mohag rate, it will amount to Rs. 11-4-0. The difference is slight. We are fixing it at Rs. 10 per acre, because it is a round figure, and because it is equal to the highest rate of assessment per acre which the Government propose to levy (to be reached after 30 years) upon the Barrage cultivation. For reasons already given, we recommend a uniform rate here also. It appears to us that the charge of Rs. 150 per cent, rate of mohag on restoration of lands forfeited more than ten years ago, has the demerit of putting owners of fallow-forfeited lands in a less favourable plight than mohagdars. This is most certainly anomalous for a claim owing to mohag could never stand a comparison to the claim of a lien on fallow lands.

49. Moreover let us be honest and fair in our dealings with the zamindars of Sind. If we make a distinction between lands forfeited 10 years ago and those forfeited more than 10 years ago, we should do so by some well understood and

well defined reason. Why not 11 or 12 or 15 or 20. What virtue is there in the figure 10? We have no wish to repeat what we have said above, that in a country where there is water hardly equal to one-third of what is required for the entire kabuli or occupied area, 10 years period does not count as of any consequence. In many cases a restriction or bandash on canals was imposed about ten years ago while the suspension of the fallow rules is only one or two years old. The lands went under forfeiture, inspite of the bandash, which was admittedly inequitable. To this inequity has to be added the payment of one year's assessment when the land is restored. The zamindar who had the misfortune of losing his land more than ten years ago, say eleven years ago, was debarred from applying for the land, owing to bandash, and yet he will be called upon to pay a double penalty. We are unable to discover either reason or justice in such arbitrary distinctions. Why fix upon 10 years as a dividing line?

50. We think it right to state here, that we have seen, in the past dangers besetting indeterminate recommendations. Hopes held out, and promises made unless they are precise are not always borne in mind. We do not wish to suggest that Government will resile from the rate of Rs. 15 promised to mohagdars by Government through their chosen and well-appointed spokesman. We are fully persuaded to believe that they will stick to the rate, and that is the reason why we wish to recommend a precise and exact rate now for the fallow forfeited lands. This rate is at any rate equal from five times to twice the rate outside the Barrage area on restored lands. It does not therefore suffer in any way by comparison and we think that it is a fair rate considered from all points of view.

The time for restoration.

51. Now as to the time, when the restoration should be made. Should the zamindars wait till the Barrage Canals are put in working order or should the restoration start now, and if so under what safe-guards? We recommend that the restoration of Charkhi lands should not be delayed, because the case of owners of Charkhi lands is a very hard one. In many places, khatedars' kabuli land has been overcropped and requires to be left fallow. There is no other land available in sufficient quantity than their own old fallow-forfeited land. The new land or the mohag land can only be granted when the Barrage opens. In some tracts, the Barrage might open in 5 years, while in others it might take 15 years. It will be scarcely right to tax the zamindar's patience for so long. We are therefore of opinion that the Charkhi lands should be restored at once. The moki lands should be given in sufficient time to make them ready, when the Barrage canals bring water to them. In the agreement to be taken from all to whom forfeited lands are restored, a clause will be inserted that in addition to the year's assessment which a zamindar is paying immediately, he will have to pay such further sum as will make up the sum of Rs. 10 per acre when the Barrage water flows on to the land.

Dero Mohbat and Tando Allahyar talukas.

52. While we are on this part of the subject, we might refer to the petition of the zamindars of Dero Mohbat which has been forwarded to us by the Secretary to Government in the Revenue Department. If in accordance with our recommendations, the fallow lands of the zamindars of this taluka are restored to them from the next year, much of the suffering detailed by them in their petition will have been alleviated and they will be satisfied that their case has received the consideration which it deserved. As for the fines levied from them for unauthorized cultivation, we leave this matter entirely in the hands of the Government with a recommendation that as Dero Mohbat consists mostly of lift land where water does not penetrate very far even for drinking purposes, Government will be showing a well deserved clemency to them by charging only nominal fines, if at all, in vindication of their authority. We should like to make a similar recommendation for Tando Allahyar and other similarly situated talukas.

Recommendation for putting restrictions on the sales of restored lands.

53. It has been suggested that khatedars to whom land is restored shall not be competent to sell the land within 10 years from the opening of the Barrage canals. We have no objection to the imposition of this condition.

54. Having laid down the conditions under which the restriction of fallow-forfeited land might proceed, we will complete this report by referring to the lien which zamindars have over the land and how successive Commissioners of Sind have interpreted it.

The lien of zamindars on fallow forfeited land.

55. The question of lien is bound up with the right to the land formerly held by each zamindar whether cultivated or not. The Thakbust survey made under the order of Sir Bartle Frere showed the *makans* (villages or groups of villages) which were registered in the name of the zamindars, with the boundaries and the rough area mentioned in it. The waste, the fallow, and the cultivated land were all put in the makans. The pattas which were granted to the zamindars in the year 1866-68, under which lump sum assessment was payable to Government showed both by area and boundaries, the cultivated and uncultivated land of each zamindar. A sample of this patta is printed at page 74 of the Sind Law Reporter, Volum VII, which formed the subject of a judicial decision by the Sadar Court of Sind. Gradually the waste land was transferred to the Khata of Government in later surveys. The zamindars up to this day are not satisfied with this transfer which they regard as highhanded and unjustified. The case of the fallow land was a much stronger case. Government officers, specially Mr. Erskine, knew that the land, waste or fallow, belonged to zamindars, and knew also that the idea which he had started that the zemindars' right could only be confined to that which he cultivated, was a foreign one and inconsistent with the well-founded contentions of the zamindars. The only solution which he could offer to this difficulty, as a solace to zamindars, was to say that the land was always there for the zemindars to take up when they could cultivate it. To quote the exact words of Mr. Erskine "if they have lost a little waste land here and there, this land is still ready for them when they wish to take it up and they still so to speak have the refusal of it." That is the only impression which the perusal of the correspondence which our indefatigable Secretary has placed before us on the subject of waste land and fallows leaves upon our minds. This is how a right to possess uncultivated land was converted into and came to be regarded as a mere lien upon such land. Government is or at any rate was in those days "absolute" as Mr. Young called it, but when the indefeasible right was taken away, the lien remained and the lien has stuck to this day.

56. Mr. and later Sir, Henry Evans James in 1900 wrote and published in his first edition of Circular Orders the passage which has been quoted by every witness before us and which occurs at page 153 of the above book. It runs as follows :—

> "The sense of proprietorship in fallow forfeited lands would still remain, and the ignoring of it would be practically impossible or at least appear an outrage on the cultivator's sense of what is just."

In 1901, his successor, Mr. Giles worte as follows :—

> "Forfeited fallow numbers are rather to be regarded as lands held in deposit pending the payment of the arrears of land revenue, due from them than as lands finally forfeited to Government. As the Commissioner has frequently explained to Government in the Land Revenue Reports, the forfeitures are more nominal than real."

57. With the lapse of time, the strength of language in which this lien was recognized began to weaken and in 1915, we find for the first time Mr. Barrow boldly flourishing the law in the face of the Khatedar and saying Government are the absolute proprietors and the Khatedar has no right in law. Then he speaks of the "*present policy*" of restoring such survey numbers to the former occupants, but he vests the discretion in the Collector. What a change from Messrs. James and Giles to Mr. Barrow.

58. In 1917, we find a further accession of strength in the language by which the lien recognized in 1900 and 1901, is converted into merely an "act of grace." Says the circular :—

> "It should be distinctly understood that such restoration is merely an act of grace."

59. We regret to say that the later writings from 1915 make rather a melancholy reading, but so far as the practice is concerned, the forfeitures are merely nominal and the restoration a long and well established rule.

60. We therefore recommend that in pursuance of the original rights of zamindars and in pursuance of the lien which took the place of the original right, and in pursuance of the practice which has long prevailed and still prevails, the lands be ordered to be restored as laid down in the preceding paragraphs.

Acknowledgment.

61. We cannot conclude this report, without placing upon record, our high appreciation of the excellent services rendered to the Committte, by its Secretary, Mr. Abdul Kader Mahomed Hussain. In addition to his experience as a Revenue officer of years, he displayed in the preparation of old records and their summaries an industry and an intelligence, which is by no means ordinary. Nor did he allow any prejudice or inclination, conscious or unconscious to cloud his sense of impartiality in making available to the members of the Committee papers and documents of all sorts, favourable or unfavourable. His conduct throughout as Secretary has been most intelligent, helpful and industrious, and we have therefore thought it right to give an expression to our admiration for his character, as an ideal Secretary.

(Sd.) S. N. BHUTTO.

(Sd.) M. S. KHUHRO.

(Sd.) SAYED MAHOMED KAMIL SHAH.

(Sd.) NUR MAHOMED.

30th May 1926.

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H.W.D.

Development Department

Back Bay Reclamation Scheme

Report

of the

Committee appointed under Government Resolution Number S.B.-949 of 14th June 1926

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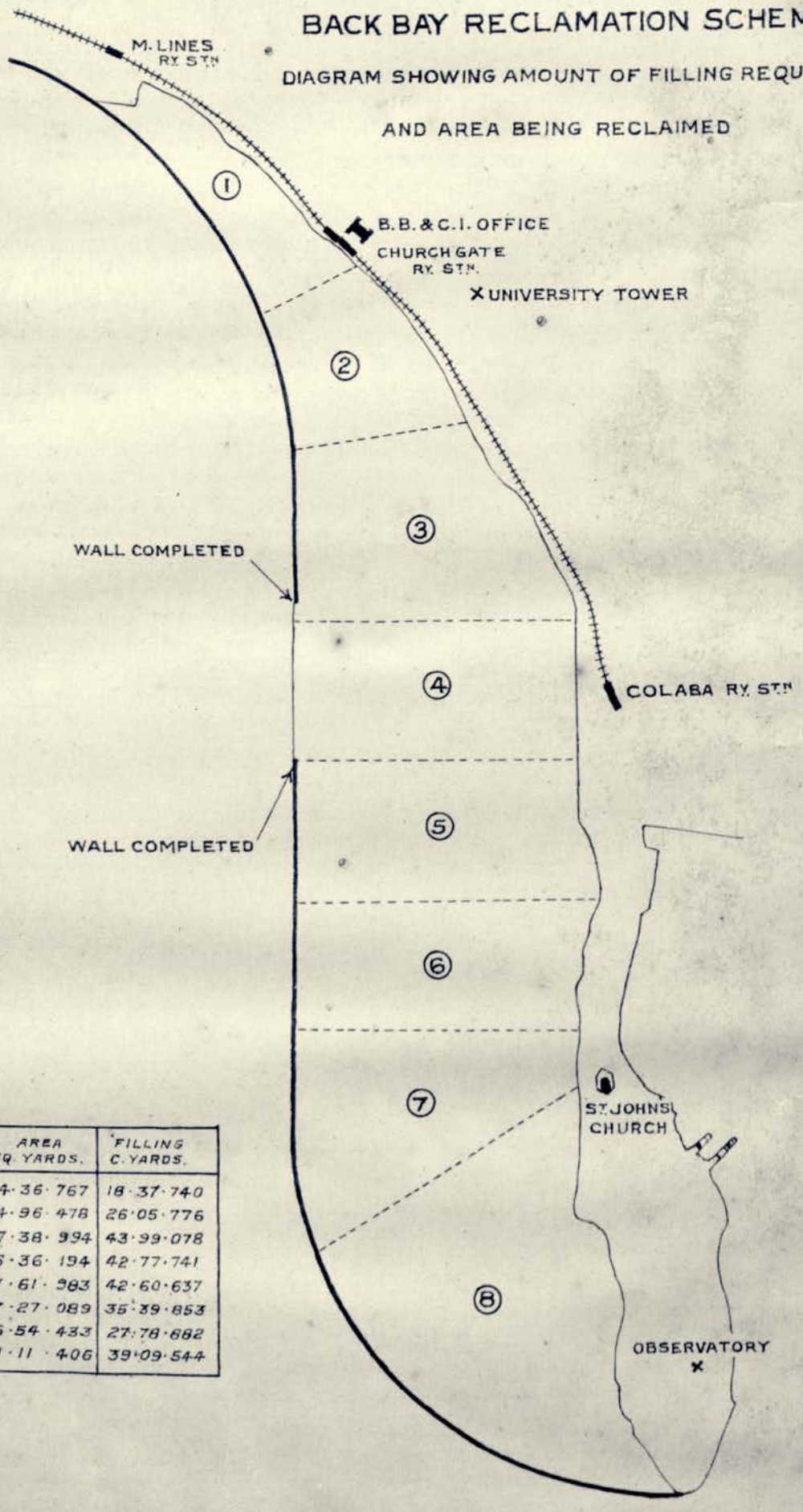
BACK BAY RECLAMATION SCHEME

DIAGRAM SHOWING AMOUNT OF FILLING REQUIRED AND AREA BEING RECLAIMED



BLOCK Nos	AREA SQ. YARDS.	FILLING C. YARDS.
1	4·36·767	18·37·740
2	4·96·478	26·05·776
3	7·38·994	43·99·078
4	6·36·194	42·77·741
5	7·61·383	42·60·637
6	7·27·089	35·39·853
7	6·54·433	27·78·682
8	11·11·406	39·09·544

G.P.Z.O. 26.

REPORT

This Committee was appointed by Government Resolution No. S.B. 949 of the 14th June 1926, the terms of reference being: "Having reference to the financial position of the Scheme, to consider and report to Government as to what, if any, further portion of the Scheme can be undertaken with reasonable prospect of reducing the present loss, and specially with reference to Blocks 1 and 2."

2. In January 1926, the Advisory Committee of the Development Directorate, who had been required "to enquire into the activities of the Development Department and to report to Government as to how far, and in what directions, such activities should be continued or eliminated", issued a report relating to the Back Bay Reclamation Scheme. This Report had been written whilst the dredging season 1925-26 was in progress, and the more favourable dredging results reported to have been obtained in that season were not therefore known to the Advisory Committee at the time they wrote their report. Thus there were grounds for thinking that these results might justify the radical revision of some of the conclusions to which the Committee had arrived, and on the 19th April 1926 Government appointed a small Committee of Engineers under the chairmanship of Mr. W. H. Neilson, Chairman of the Bombay Port Trust, to check and revise the estimates on which the conclusions of the Advisory Committee had to a large extent been based. We shall refer to this Committee hereafter as the Neilson Committee. Subsequently the terms of reference to the Neilson Committee were slightly modified with a view to enable that Committee to examine estimates for the completion of other blocks than those recommended to be completed by the Advisory Committee, and which this Committee might recommend should be undertaken. It will at once be clear that we could not be in a position to consider the Scheme as fully as our terms of reference required until the Neilson Committee had reported. The Report of the Neilson Committee was signed on the 30th July last, and our first task was to take that report into consideration.

3. **The Neilson Report.**—The Neilson Report is not a lengthy document. Their terms of reference did not specifically require them to give a programme or forecast of expenditure, and they did not do so. We have had to forecast financial results, and we have therefore found it necessary to consider programmes of estimated annual expenditure, since the Department is working on borrowed money and interest has to be paid. Though we have received all possible assistance from the Officers of the Development Department, we have not been able to base our conclusions on a programme of work approved by the Department, mainly because its programme is still more or less on the anvil as a result of its attention to past experience and recent criticism. We have conceived it to be our duty to accept the rates arrived at by the Neilson Committee, and their estimates of annual output where these are given. From the Neilson Report we calculate that 364,500 brass of consolidated filling can be dredged in one season from the harbour at a cost of Rs. 2·75 per brass; that 121,500 brass of consolidated filling can be dredged from Back Bay at a cost of Rs. 4·875 per brass; and we also take their estimate that the cost of murum filling is Rs. 5·79 per brass. We take these estimates purely on the responsibility of the Neilson Committee and are not competent to criticise them, and to the extent that those estimates are based on hypothetical considerations or are given with diffidence, our estimates also must be accepted with caution.

4. **Murum Filling.**—We find it necessary to make a few preliminary remarks specially with regard to murum filling. (*a*) We have ascertained from the Director of Development that although the present quarries at Kandivli are nearly worked out, there is available in their immediate neighbourhood more than sufficient murum for the work required, and we accept his statement that the rate of Rs. 5·79 per brass, which includes a charge for cost of acquisition or royalties; is a sufficient rate to assume for all necessary supplies. (*b*) We have also ascertained from the Director that the amount of murum filling that can be brought into the development area is about 150,000 brass per annum, representing a consolidated filling of 127,500

brass, but that certain negotiations are in progress with the B. B. & C. I. Railway under which the Director confidently expects that the carrying capacity of the existing rolling stock will be considerably increased. We have carefully considered this statement and have come to the conclusion that it would be safer not to assume that the additional carrying capacity for murum will materialise. We have therefore based our programme for murum filling on the present experience rather than on the future hopes of the Department. (*c*) We also find that the Neilson Committee allow for a topping of murum only one foot deep throughout the area. The Development Department now consider that in the area filled by dredging from the harbour, an average depth of two feet of murum topping will be required. The Neilson Committee's attention does not appear to have been specifically directed to this point, which has an important effect on the cost of reclamation, and as the departmental view appears to us to be reasonable, we have provided in our estimates for the larger quantity of the more expensive murum filling in the area to be filled by dredging from the harbour.

5. **Establishment charges.**—We have also raised the figure of 13½ per cent. for establishment charges, taken by the Neilson Committee, to 15 per cent. This higher figure is the one now taken in the departmental estimates, and we consider that looking to the fact that the actual programme of work which we shall recommend is a somewhat restricted one, being in most years considerably below the Rs. 30 lakhs of Capital Expenditure, which the Neilson Committee assume for next season, it is reasonable to suppose that the incidence of establishment charges will be somewhat higher. The approximate figures which we take for costs of developing the reclaimed areas are inclusive of establishment charges.

6. **Rate of interests.**—It is necessary to explain the rates of interest which we have assumed in our calculations. We have throughout taken a rate of 6 per cent. We are aware that the average rate which has to be paid upon the present outstanding debt is in excess of 6 per cent., and we have a reasonable hope that the rate during the years to come may be considerably less. We realise that a variation in this figure would make a large difference in our estimates, but we are dealing with large sums of public money and we have thought it necessary to take a safe margin. We feel that we would not be justified in recommending any part of the Scheme if we thought that the difference between failure and success depended on the accuracy of our forecast of the prevailing rate of interest, say to within a half per cent. As we have written back all our estimates of expenditure to present value, the fact that we have taken a lower rate than that actually being paid on the present debt does not affect the accuracy of our results.

7. We now come to the main body of our recommendations. We propose to give a very brief indication of the present financial position of the Scheme and to consider how that aspect is likely to be affected by the successive completion of different parts of the Scheme.

Present Financial Position

8. We start therefore with the fact that the total expenditure on all works, establishment, etc., connected with the Back Bay Reclamation Works up to 1st July 1926 is approximately Rs. 590·91 lakhs. If all work is immediately stopped and no further progress with the Scheme is made, the whole of this expenditure is loss without hope of recoupment, except such sums as can be realised from the sale of the dredging and other plant. The realisable value of the whole plant was estimated less than a year ago by the Advisory Committee to be Rs. 45 lakhs, and after discussing the matter with the Director of Development, we have resolved that it would be safer to make a further reduction in this amount, and we estimate the value at Rs. 25 lakhs. We do not think that the whole Department could be wound up and all work stopped earlier than 1st October 1926, and we are informed by the Audit Officer that by that date the probable total expenditure would have amounted to Rs. 605·71 lakhs. The unproductive debt, therefore, for which amortization proposals would have to be made, will amount on 1st October to over 580 lakhs. On this sum the annual charges for 30 years Sinking Fund improving at 4 per cent. would be Rs. 10·34 lakhs, and the annual interest charges at 6 per cent. would be Rs. 34·80 lakhs, or a total annual charge of Rs. 45·14 lakhs. After

1935, when the period of the Development Loan expires, the rate of interest would be somewhat lower. We take 30 years for the Sinking Fund because this is the period within which all Loans taken from the Provincial Loans Fund for unproductive purposes are required by the Government of India to be repaid. Throughout this Report, wherever the words " present value " are used, the value on the 1st July 1926 is meant.

Block 8

9. We have next considered what would be the position if Block 8 were carried to completion and sold under the existing agreement to the Army Department of the Government of India. We accept the opinion of the Development Department that it would not be economical to carry on further dredging in this area and that the Block should be completed by murum filling spread over two years. We consider that in this way the actual reclamation could be completed by the end of the financial year 1927-28, and that soon after that date the Government of India may be expected to take possession of the land and make the payment of Rs. 239·09 lakhs according to agreement. We have however not taken credit for this payment till the end of the year 1928-1929. In this way we calculate that the outstanding debt of Rs. 590.91 lakhs on 1st July 1926 would be reduced to Rs. 469·89 lakhs on 1st April 1929. The sum that would be required on the 1st July 1926 at 6 per cent. interest to produce Rs. 469·89 lakhs on the 1st April 1929 is Rs. 400·31 lakhs. The difference between this figure of Rs. 400·31 lakhs and Rs. 590·91 lakhs, namely Rs. 190·60 lakhs, represents the present value of the reduction of the debt, which would result from the completion of this block and the sale of it undeveloped to the Government of India. From the size of this figure it is obvious that even if the estimates for the completion of this block were very seriously exceeded, the gain by completing it instead of immediately abandoning all operations would still be very large, and we have therefore no hesitation in urging that the reclamation of this Block should be completed.

We also invite attention to the fact that the whole of Block 8 is not to be handed over to the Government of India ; a strip one hundred feet wide along the sea wall, along which ultimately the Marine Drive may be extended, is to be retained by the Government of Bombay. We have been assured that the cost of maintenance of the sea wall in this area will be practically negligible.

Block 1

10. We next pass to the consideration of Block 1. We have taken from the Neilson Report our estimates of the total quantities required for the filling of this Block, of the amount of dredged filling that can be deposited in one year and the rate at which it can be obtained, the rate for dry filling by lorries, and also the amount of murum filling which will have to be brought by train, and the rate at which this can be deposited. We have taken care to see that the programme of actual expenditure on this Block will not conflict with that which has been proposed for Block 8, so that work can be carried on in these two Blocks simultaneously.

The programme of work is as follows :—

	Brass	Rate	Lakhs Cost
1st July 1926 to 31st March 1927—			
Dredged Filling	1,20,000	4·875	5·85
Lorry Filling	30,000	2·5	·70
S. W. Drain	..	..	·84
			7·39
Establishment at 15 per cent.		..	1·11
			8·50

		Brass	Rate	Lakhs Cost
1927–28—				
Dredged Filling		95,000	4·875	4·63
Lorry Filling		40,000	2·5	1·00
Murum Filling		22,000	5·79	1·27
				6·90
Establishment at 15 per cent.			..	1·04
				7·94
1928–29—				
Parapet		..	..	1·01
Murum Filling		18,000	5·79	1·04
				2·05
Establishment at 15 per cent.		..	..	·31
				2·36

Cost of Reclamation of Block 1.—From these estimates, we calculate that when these two blocks (1 and 8) have been reclaimed, undeveloped, and after allowing for the sale of Block 8 to the Government of India not later than the 1st April 1929, the outstanding debt will have been reduced from Rs. 590·91 lakhs to Rs. 490·76 lakhs, of which the present value is Rs. 418·10 lakhs. It will be clear, therefore, that by completing these two blocks undeveloped, there will be a reduction of loss equivalent at present value to Rs. 172·81 lakhs, even if no land in Block 1 can be sold; and since the reduction of loss by completing and disposing of Block 8 only was found to be Rs. 190·60 lakhs at present value, the extra cost of completing Block 1, undeveloped, is Rs. 17·79 lakhs reckoned on the 1st July 1926.

11. **Cost of Development of Block 1.**—We have then considered the cost of development of this block. We have assumed that looking to the present financial position, and the possibility that the Scheme would not be completed as a whole, it would be necessary to abandon the preliminary lay-out of this area prepared by Mr. Davidge, and we have had before us tentative lay-outs of Blocks 1, 2 and 7 prepared by Mr. Stamper, the Acting Consulting Surveyor to Government. We have considered these lay-outs, and while we are not in a position to approve of them in detail, we are of opinion that we can safely take from them approximate figures of the net area which will be available for sale as building sites, and we have based our calculations of the cost of development of the area on a consideratoin of these plans. The revised lay-out of Block 1 provides for the retention of a large recreation ground, over 32 acres in extent. We estimate that the cost of development of Block 1 including sewers, drains, roads, carriage ways, lighting, etc., will be about Rs. 15 lakhs, which we propose should be spread over a period of three years commencing from 1928-29, the year in which filling operations will be complete. The present value of this expenditure comes to Rs. 12·07 lakhs. The cost of reclamation has been shown above to be Rs. 17·79 lakhs, and the present value of the cost of reclamation and development is therefore Rs. 29·86 lakhs. We estimate that the net building area for sale in this block will be about 1·05 lakhs square yards, so that the present value of the additional cost per square yard of net building area over and above the amount which has already been spent comes to Rs. 28·44 per square yard. This figures includes the cost of the recreation ground amounting to 32·66 acres, or over 158,000 square yards. A cost of Rs. 28·44 per square yard in 1926-27 corresponds to a cost of Rs. 33·84 in 1929-30, when we propose that sales should begin and Rs. 45·34 in 1933-34, when we anticipate they would end.

12. **Realisations from Block 1.**—We consider that if only this block is completed and Block 2 is not proceeded with, an average net price of Rs. 70 per square yard could be obtained for the net building area of 1·05 lakhs square yards, and that the whole of this land could be disposed of in five years commencing from 1929-30, the year after the development of the area commenced. We have not thought it necessary to complicate our calculations by deducting from the receipts the cost of a small sales establishment, and a small percentage for brokerage. We realise that in estimating prices to be obtained for large quantities of land in the future no very exact estimate can be given, and we have thought it better not to suggest by the deduction of small expenses from large receipts a degree of arithmetical exactitude, which we are conscious that our estimates cannot possess. We have calculated that the amount of Rs. 73·5 lakhs, which would be received in varying amounts throughout the five years, would have a present value on the 1st July 1926 of Rs. 53·10 lakhs. As we have shown that the total developed cost of Block 1 would be Rs. 29·86 lakhs, it will be clear that the completion and development of this area and the sale of the building plots would result in a further reduction of debt of Rs. 23·24 lakhs, and that in addition the City would be the richer by the large recreation ground of over 32 acres. From these facts we have come to the conclusion that the reclamation of Block 1 should be proceeded with.

Block 2

13. When we came to consider the question with regard to Block 2, we found ourselves faced with very formidable difficulties, and we desire to make very clear the conditions and limitations to which our conclusions must be regarded as subject. In the first place, the Neilson Committee have not interpreted their terms of reference as requiring them to give any estimates with regard to this block, and although we might have required them to consider this question, the time at our disposal was brief, and we felt that the only certain result of this course would be that our own report would be considerably delayed. We examined Mr. Neilson, and learned that he did not consider that the rate of Rs. 4·875 which he had given for Block 1 would hold good for Block 2, but that the rate would probably be higher. The estimate of the Development Department for the cost of dredging in Back Bay is lower, and we felt that we could not at any rate take a lower figure than the Neilson Report had given for Block 1. We have taken as our estimate for consolidated dredged filling in this area Rs. 4·875 per brass, which is the same figure as for Block 1, and we have also taken the same output, 120,000 brass of consolidated filling, for a full dredging season in Block 2 as was estimated by the Neilson Committee for Block 1. But we take no responsibility for the accuracy of those figures. We invite attention to the fact that the cost of dredged filling is already very high for Block 1, and we apprehend that the output when pumping into Block 2 with a longer pipe line may be so considerably reduced as to bring the cost of dredged filling into this area above the price of dry filling, in which case, dredging might cease to be a profitable proposition. As regards dry filling with murum, we have, as stated in paragraph 4, ascertained from the Director that although the present quarries are nearly worked out, the Department will be able to obtain sufficient additional supplies from an adjacent site, and that the cost of Rs. 5·79 per brass is likely to prove adequate.

14. **Tentative nature of programme of work for Block 2.**—The programme on which we have worked does not provide for any work being done in this block in the season 1926-27 other than the completion of the storm water drain. We consider that the probable cost of dredging into this block must be carefully reconsidered in the light of the results of the dredging done into Block 1 in the coming season, and that dredging into Block 2 should not be commenced unless those results show that our estimate of the cost of reclamation of this block will not be so seriously exceeded as to affect our forecast of the financial results of its completion and development. We wish to state this very emphatically, and it is only on this understanding, and in the absence of any programme of work approved by responsible engineers, that we have ventured to put forward a working programme at all. We understand that tenders for dry filling by contract have already been called for by the department, and we assume that if the result indicates that the area can be completed by dry filling more cheaply than by dredging, then dredging operations will be abandoned. We think, indeed, that as a matter of general principle, the

possibility of continuing reclamation operations with the aid of contractors instead of departmentally should be thoroughly investigated.

15. Subject to the foregoing remarks, the following is the programme of work on which our estimate of the cost of completing Block 2 is based :—

Expenditure on Block 2

			Lakhs
1st July 1926 to 31st March 1927—			
S. W. Drain			1·08
Establishment at 15 per cent.			·16
			1·24
1927-28—	Brass	Rate	
Dredged Filling	25,000	4·875	1·21
Establishment at 15 per cent.			·18
			1·39
1928-29—			
Dredged Filling	120,000	4·875	5·85
Murum Filling	100,000	5·79	5·79
			11·64
Establishment at 15 per cent.			1·75
			13·39
1929-30—			
Dredged Filling	120,000	4·875	5·85
Murum Filling	100,000	5·79	5·79
			11·64
Establishment at 15 per cent.			1·75
			13·39
1930-31—			
Dredged Filling	17,000	4·875	·83
Murum Filling	71,500	5·79	4·14
			4·97
Establishment at 15 per cent.			·74
			5·71

16. **Cost of Reclamation of Block 2.**—We calculate that if Blocks 8, 1 and 2 are carried to completion, and Block 8 disposed of to the Government of India when ready, these three blocks will have been reclaimed at the end of the financial year 1930-31, leaving an outstanding debt of 590·72 lakhs. The present value of this would be 447·90 lakhs. As we start with an opening debt on 1st July 1926 of 590·91 lakhs, the completion of these blocks undeveloped would, owing to the sale of Block 8 to the Government of India, still mean a reduction of loss equivalent at present value to Rs. 143·01 lakhs even if no land in Block 1 or 2 were sold. We have shown above in paragraph 10 that the reduction of the opening debt effected by the completion of blocks 8 and 1 only would be Rs. 172·81 lakhs. The present value of the extra cost of completing Block 2 is therefore Rs. 29·80 lakhs.

17. **Cost of Development of Block 2.**—The cost of development of this area has now to be taken into consideration. We have had to abandon entirely the original lay-out made by Mr. Davidge, under which this area was to be entirely devoted to public buildings, and we have assumed that it would be developed as a residential area. We have considered the tentative lay-out of this area made by Mr. Stamper, and we have taken from that, as the basis of our calculations, that out of the gross area of 496,000 square yards the net area available for building would be 264,000 square yards. The total cost of development of this area we estimate at 25 lakhs, which we propose should be distributed over three years commencing from 1930-31, the year in which reclamation would be completed. Although, as will be seen from the next paragraph, we consider that sales may go on over a somewhat extended period, we have thought it necessary to allow for the complete development of the area at a comparatively early date, because we hope thereby to stimulate sales. The present value of this expenditure is Rs. 18·46 lakhs. Adding this to the present value of the cost of reclamation (Rs. 29·80 lakhs), we get Rs. 48·26 lakhs as the present value of the developed cost of Block 2.

18. **Realisations from sales in Blocks 1 and 2.**—When we came to consider the disposal of the building land, we found it necessary to take Blocks 1 and 2 together. We do not think that the price of Rs. 70, which we have assumed for land in Block 1, will be materially affected by competition with land in Block 2, but the time necessary for its disposal may be affected. There is in Block 1 a greater proportion of land with a high site value because of its situation on the marine front, and we therefore take a lower figure for the average value of land in Block 2. We are of opinion that an average net price of Rs. 50 per square yard would be a reasonable figure to assume for this area, and that the sales in both blocks would be completed within twenty years beginning from 1929-30, which is the year after the development by road-making, etc., of the reclaimed area in Block 1 would be commenced. We think there is a possibility that the substitution of leases for outright sales might tend to reduce the period of sales, and we desire that this suggestion should be fully explored. The combined net building area in Blocks 1 and 2 would be 369,000 square yards and would yield 205·5 lakhs of rupees during twenty years from 1929-30. Assuming receipts to be evenly spread over this period, the present value of this sum would be 100·40 lakhs. The total developed cost of these areas, over and above money already spent, would be Rs. 78·12 lakhs (Rs. 29·86 for Block 1 and Rs. 48·26 for Block 2). The reclamation, development, and sale of these two blocks would therefore result in a further reduction, over and above that resulting from the completion and sale of Block 8 only, of the present outstanding debt by 22·28 lakhs.

19. It will be observed that the reduction of debt resulting from the development and sale of Block 1 only was 23·24 lakhs (see para. 12), so that the reduction to be hoped for from the completion of Blocks 1 and 2 is slightly less than that to be anticipated from Block 1 alone. It is for this reason that we think it necessary to lay stress on the tentative nature of the estimates on which the cost of reclamation of this block are based, and to insist that this block shall not be commenced unless that course is justified by a review of the actual results obtained in Block 1. Subject to this, we are prepared to recommend that the reclamation and development of Block 2 should be undertaken even at the slight loss of less than a lakh of rupees, which we estimate may result. We think such a small loss will be amply repaid by the general advantage to the City resulting from the extension of the marine drive and the development of what is, in its present unfinished conditions, the most unsightly portion of the sea wall and foreshore.

20. **Materials for Estimating Realisations.**—We think it advisable here to indicate the materials and considerations on which our estimates of the prices that may reasonably be expected to be obtained in this area have been based. We have had a map prepared by the Superintendent of Survey and Land Records, Bombay, showing the sales of land in the immediate neighbourhood of Back Bay during the last fifteen years, and we have considered the prices obtained in the light of our knowledge of the prevailing conditions of the land market at the time of sale. We have had maps prepared by the Bombay Port Trust, the Improvement Trust and the Bombay Municipality showing the land that they

have, or are likely to have, in the near future, available for sale or lease to the public, and we have considered in detail the extent to which those lands are likely to compete with the Back Bay Reclamation. We have considered the prices which these public bodies have obtained, or estimate that they will obtain, for these lands. We have also got such assistance as we could from a consideration of Municipal assessments of neighbouring properties. Estimates of the prices to be obtained and of the period for disposal, must, however, be based mainly on the view taken of the future course of trade and industry, and particularly of the cotton mill industry in Bombay, and on this point such accumulated experience as we jointly possess could be our only guide.

Block 7

21. **Urgency for decision regarding Block 7.**—We now come to the question whether the reclamation of Block 7 should be undertaken. There is no part of our recommendations to which we have given more careful consideration, because we realise that this is a matter on which Government must come to an almost immediate decision, and that whichever way that decision is given, there must be considerable waste of public money if it is delayed. This urgency arises from the fact that the dredging season commences early in October, and if material dredged into the area is not to be lost, first of all the sea wall must be sealed and then a cross-bund must be constructed to prevent the escape of the material. The first of these works is the more urgent, and will occupy about five weeks; the second is less urgent and can go on concurrently with dredging but will have to be done during this season, and will take about four months. These works will require about 79,000 brass of murum filling.

22. Here we must make a reference back to paragraph 4 (*b*) of this report, in which it was pointed out that the maximum output of consolidated murum filling which we were satisfied could be done in a single year was about 150,000 brass of material carried, representing 127,000 brass of consolidated filling. Now we have given reasons which we consider cogent for urging that block 8 should be completed with as little delay as possible. The programme provides for 98,000 brass of consolidated murum filling into block 8 from 1st July 1926 to 31st March 1927, and for 105,300 brass in 1927-28. 98,000 brass represents a full programme for nine months and it is clear, therefore, that unless the total production of consolidated murum filling can be increased beyond 127,000 brass per year, the amount of 79,000 brass required for sealing the wall and constructing the cross bund in Block 7 cannot be provided without carrying over the work in block 8 into another season. This will mean a delay of one year before block 8 can be completed and handed over to the Government of India, and therefore a delay of one year before the receipt of 239·09 lakhs can be counted on. This involves a loss of 14 lakhs of rupees in interest. We do not think the risk of this loss should be taken, and we are therefore of opinion that the sealing of the wall and construction of the cross bund in Block 7 ought in no case to be undertaken if there is any possibility of it delaying the completion of Block 8.

23. We have stated that negotiations are pending with the B. B. & C. I. Railway as a result of which the Director thinks that the department, by the middle of January next, may be able, with their existing rolling stock, to run four trains a day, instead of two and so considerably increase the supply of murum filling. If this possibility materialises quickly into something much more like a certainty than we think it has done at present, we are willing to concede that it might be reasonable to start work at once on block 7 if there were a likelihood of this block proving a financial success; but we are emphatically of opinion that this should not be done if it endangers the early completion of block 8.

24. **Working Programme for Block 7.**—On the assumption, then, that the required murum filling can be found for sealing the wall and constructing the cross bund in Block 7, without affecting the programme for block 8, we have considered the following programme for block 7, which is based on the findings of the Neilson Committee. The only change we have made is in the quantities of murum filling required, which we have increased because we accept the latest opinion of the department, based on their experience in Block 8, that an average of two feet of murum topping will be required over the area filled by dredging

from the harbour instead of the one foot for which the Neilson Committee provide. The programme for reclamation of this block is, therefore, as follows :—

Details of Expenditure on Block 7

Total Contents=2,778,882 cubic yards	750,000	brass, approx.	
Dredged Filling	553,000	,,	,,
Dry Filling	197,000	,,	,,
	750,000		

	Brass	Rate	Lakhs
1st July 1926 to 31st March 1927—			
Dry Filling (dealing wall and bund)	79,000	5·79	4·57
Dredging	315,000	2·75	8·66
			13·23
Establishment @ 15 per cent.			1·98
			15·21
1927-28—			
Dredging	238,000	2·75	6·55
Establishment @ 15 per cent.			·98
			7·53
1928-29—			
No work being done. (Dredged filling allowed to dry. All dry filling plant employed in Block 2)			*Nil.*
1929-30—			
Dry Filling	118,000	5·79	6·83
Parapet			·60
			7·43
Establishment @ 15 per cent.			1·11
			8·54

25. **Cost of Reclamation of Block 7.**—We have calculated the financial result of this additional work, and find that the result of completing blocks 8, 1, 2, and 7, undeveloped, and taking credit for the sale of Block 8 to the Government of India, would be to increase the opening debt of Rs. 590·91 lakhs on 1st July 1926 to Rs. 628·92 lakhs on the 1st April 1931. The present value on 1st July 1926 of Rs. 628·92 would be 476·86 lakhs, and the completion of these four blocks, undeveloped, and the sale of Block 8 to the Government of India would therefore result in a reduction of the present outstanding debt by 114·05 lakhs. We have already found that the reduction of debt by completing only blocks 8, 1 and 2, would be 143·01 lakhs (see para. 16) and the present value of the extra cost of completing Block 7 undeveloped is therefore 28·96 lakhs.

26. **Development of Block 7.**—The cost of development of this area requires careful consideration. The Neilson Committee has accepted the rough departmental estimate, based on the old layout of Mr. Davidge, that the cost of developing this block by roads, lighting, drains, etc., will be 26·43 lakhs. We have considered Mr. Stamper's revised layout, which however corresponds very closely with Mr. Davidge's because of the necessity of allowing for the possibility that at some period or other, however remote, the whole reclamation of Back Bay might be completed ; and we do not consider that the cost of development will materially alter as a result of the revised layout. But we think it necessary to invite attention to the unsatisfactory position as regards the disposal of sewage in this area, and to point out the probability that the early development of this area would almost certainly involve the provision of temporary arrangements for sewage disposal,

of which the cost would be several lakhs of rupees. The Municipal Commissioner informs us that " the construction of the (Municipal sewage) outfall at Colaba was primarily intended to deal with the reclamation, and it is impossible to say when the work on this outfall will be commenced, until we are in a position to know whether the reclamation is to be completed in its entirety." The Municipal Commissioner's letters relating to sewage disposal in the reclamation area are printed as an appendix to this report.

27. We therefore apprehend that very considerable extra development expenditure in this area may be involved by the construction of the temporary sewage works. There is at present no main sewer in this part of the island which is capable of taking the sewage from this area. These temporary works would in all probability necessitate the laying of intercepting sewers and certainly the construction of a sump, a rising main, and a septic tank, and the installation of pumps. The cost of providing these and the annual upkeep charges have not been provided for in our estimate as we have no data on which to base them.

28. Apart from this we consider that 26·5 lakhs is a reasonable estimate for the cost of development of this area, and we consider that this expenditure might be spread over five years commencing in 1930-31, the year after reclamation operations would be complete. We propose that 5 lakhs should be spent in each of first three years, 7 lakhs in the fourth, and the remaining 4·5 lakhs in the fifth. The present value of this expenditure would be 19·54 lakhs. Adding this to Rs. 28·96 lakhs, the cost of reclamation, we obtain Rs. 48·50 lakhs as the present value cost of reclamation and development of this area.

29. **Realisations from Sales in Block 7.**—When we come to consider the probable realisations from this area we find that the net building area would be about 3·40 lakhs square yards out of a gross area of 6·54 lakhs square yards. This land is at a considerable distance from the heart of the city and we do not think it is ever likely to become a popular residential area for the wealthier classes of the population. There is already, or will be in the immediate future a very large area of vacant land, suitable and available for residential purposes, which will compete directly with this land. The Port Trust have for disposal in this area some 45,000 square yards set free by the removal of the Cotton Green to Sewree, the B. B. & C. I. Railway will have over one lakh of square yards for disposal , the G. I. P. Railway have 35,500 square yards, and the Colaba Land and Mill Company have nearly one lakh of square yards of net building area available for sale in the immediate vicinity, and there are also considerable areas for disposal in the hands of the Military Department and private owners. Taking all the facts into consideration we are of opinion that we cannot reasonably expect a higher average price than Rs. 25 per square yard for the reclaimed land in this area, and that the period of disposal will be 20 years commencing from 1931-32, the year after development operations begin. This will give a total receipt for 3·40 lakhs square yards net building area of 85 lakhs, of which the present value is 36·97 lakhs.

30. It will be at once apparent that with a present value cost of Rs. 48·50 lakhs and a recoupment of Rs. 36·97, the reclamation and development of this area is not a paying proposition. We have therefore considered whether it would not be economical merely to reclaim the land and to leave it undeveloped until it might be required either for the expansion of the city or as a necessary open space for recreation. We have come to the conclusion that by the time this land might reasonably be expected to be required for these purposes, the interest charges plus the cost of reclamation by dredging would have amounted to a sum which would exceed the cost of dry filling at that date. It would be more economical not to fill the area now by dredging, but to proceed with the reclamation by dry filling as, and when it might be required.

31. **Recommendation regrding Block 7.**—We, therefore, recommend that the reclamation of Block 7 should not be proceeded with at present. The dredger " Sir George Lloyd " and other dredging plant not required for dredging in Back Bay should not be worked and such reductions in establishment and other economies as are rendered possible by this decision should be carried out as early as possible.

32. **Foreshore areas in Blocks 5, 6 and 7.**—While we are unable to recommend that the reclamation of Block 7 should be proceeded with, we wish

to invite the attention of Government to the possibility of extending the present line of Cuffe Parade by the reclamation of the foreshore areas in Blocks 5, 6 and 7. The sea here is very shallow and already much filling has been deposited by leakage from Block 8 ; it should therefore be possible to reclaim the land at a very low cost, and we think there might be a better market for this land than for most lands in the Colaba area. We have not the data on which to make a definite recommendation on this subject, but we are of opinion that it should be carefully investigated.

33. **Future of the Scheme.**—It is necessary to say a few words regarding our views of the Back Bay Reclamation Project as a whole. It will be clear from what we have already said that we do not think an early prosecution of the whole scheme is a practical financial proposition. We have been assured that the sea wall is practically a permanent structure and that the cost of keeping it in repair is negligible. We have considered the possibility of continuing the part of the wall at present constructed, of connecting the two ends by some kind of a bridge in order to make a continuous marine drive, and of turning the unreclaimed area within the sea wall into a sort of ornamental inland lake. We have before us no expert opinions on the technical feasibility of this project but it is certain that even this degree of development would cost a great deal of money, and we do not think that any opinion we might give on such a scheme would be of value in the absence of a definite proposal brought forward by responsible persons and backed by careful estimates of cost. It would be an amenity, but the people of Bombay can only have such amenities as they are prepared to pay for and for many years to come there will be little public money to spare for anything but necessities.

34. We think that Government should consider the question of extending the powers of the Advisory Committee to the Development Department in the direction of giving them executive functions somewhat similar to those exercised by such public bodies as the Bombay Port Trust and the Bombay Improvement Trust.

35. In conclusion, we desire to express our appreciation of the services of Mr. H. Dow, I.C.S., who was appointed by Government Resolution No. S. C. 1180 of 19th July 1926 to be Secretary to our Committee. Owing to the shortness of the time available for our deliberations, he has had to work at very high pressure, and his work in calculating a large number of statements and in drafting this report has been a great assistance to us, and calls for our highest appreciation.

(Signed) JOSEPH A. KAY
(Chairman).
(,,) R. H. A. DELVES.
(,,) R. P. PARANJPYE.
(,,) G. B. PRADHAN.
(,,) A. GEDDIS.
(,,) R. M. CHINOY.
(,,) LALJI NARANJI (*subject to my minute*).

H. DOW,
Secretary.
20th August 1926.

MINUTE BY MR. LALJI NARANJI

I am sorry I have to submit a separate Minute of dissent disagreeing from my colleagues, and I do not agree with the very comprehensive report prepared by them.

I, however, agree with my colleagues that blocks 8 and 1 should be completed. I believe that with an additional expenditure of 13 lacs of rupees Government will get from the Military Rs. 279·08 lacs on completion of Block No. 8. I must mention here that the basis for this 13 lacs of rupees new expenditure has been got from the report of the Neilson Committee and I am mentioning this figure for what it is worth.

My reason for agreeing to the completion of Block No. 1 is because the work has already been continued on it inspite of protests from public and large sums of money have already been spent. A portion has already been filled up and in my opinion it will be unwise to leave it uncompleted at this stage as it will be a danger to the health of the City. An additional expenditure of 19 lacs by Government on this Block will yield about 125,000 square yards of building area and about 150,000 square yards for recreation ground. Another additional reason for my agreeing to complete this block is that it will ultimately reduce our present losses. I must, however, emphasize that my agreement to complete this block is distinctly on the understanding that the figures of cost as placed before us will not be exceeded. I would also point out that I have grave doubts about the land fetching as much as 70 rupees per yard on an average as my colleagues seem to think if the other blocks are proceeded with. My colleagues however do not seem to attach sufficient importance to the enormous area of land already available in the same neighbourhood. I am afraid that they also appear to have overlooked the fact that the great demand for land in 1920 and 1921 was due to the fictitious war prosperity of those years when there was a big boom in the business. The disposal of the whole area will take a very long time and the average price may not even come to half the figure assumed by my colleagues. The longer the period the larger is the accumulation of interest and other charges and all these factors are bound to upset any calculation of extra savings to be made from the completion of these blocks. I shall be quite happy if we could cover only the additional expenditure now to be incurred plus the interest and charges to the date of the final disposal of the land in question.

Block No. 2 is to be commenced if certain conditions are fulfilled. There is no data before this Committee available from the Neilson Committee to whom this Committee was referred to check the costs of departmental estimates and as this has not been done, I will not hazard any opinion on Block No. 2.

I agree with my colleagues that Block No. 7 should be abandoned. I however think that the estimate of Rs. 25 per yard is wrong. It will never fetch more than Rs. 15.

I would also like to point out that the method of looking at losses of this kind from the present value figures is entirely misleading. The losses will be the net outlay by the Government in the shape of capital, costs, interest and charges as they stand after crediting all realizations on particular dates in future, but not earlier than two years. I am afraid the losses will be much higher than my colleagues would like to make out on the basis of so-called present values and I would like the public to clearly understand that the ultimate cost of the tax-payers of this Presidency is going to be much larger than my colleagues would make it out. The figures of present value are entirely misleading. I believe that the correct calculation of such cost would depend upon a correct estimate of the period that is required before all the land is finally disposed of and it is very difficult to fix any period for the sale of the land which entirely depends on the improvement of trade and industry which is very uncertain now.

I am of opinion that the dredger " Sir George Lloyd " should be disposed of at once thereby saving further costs. Besides there is no work for this dredger.

I further say that the Department should only complete Blocks Nos. 8 and 1 which have been partly prepared by them.

The Development Department is no longer necessary now, should therefore be immediately abolished and such work as remains to be done be transferred to the Public Works Department.

I believe that the further prosecution of the whole scheme at any date is fraught with many dangers and is not financially sound.

(Signed) LALJI NARANJI.

Bombay, 20th August 1926.

APPENDIX 1

STATEMENT SHOWING FINANCIAL EFFECT OF RECLAMATION OF BLOCK 8 ONLY

Expenditure on all Back Bay Reclamation Works including interest up to 1st July 1926 is Rs. 590·91 lakhs

(All figures in lakhs)

Year	Debt out-standing	Expenditure during year	Interest at 6 per cent.	Total Capital Expenditure (cols. 1, 2 & 3)	Receipts	Debt at the end of year	Remarks
1st July 1926 to 31st March 1927.	590·91	6·53	26·74	624·18	*Nil*	624·18	Interest for 9 months only.
1927-28	624·18	7·01	37·66	668·85	*Nil*	668·85	
1928-29	668·85	*Nil*	40·13	708·98	239·09	469·89	Payment of 239·09 lakhs by Government of India assumed on last day of financial year.

Interest is calculated on the opening debt *plus* half the expenditure of the year.

The value on 1st July 1926 of Rs. 469·89 lakhs on 1st April 1929 is Rs. 400·31 lakhs.

Therefore, the completion of Block 8 will result in a reduction of debt of 190·60 lakhs on 1st July 1926.

This Statement does not take any credit for disposal value of any plant.

APPENDIX 2

COST OF RECLAMATION OF BLOCKS 8 AND 1 ONLY

(All figures in lakhs)

Year	Debt outstanding	Expenditure during year	Interest at 6 per cent.	Total Capital Expenditure (cols. 1, 2 & 3)	Receipts	Debt at the end of year	Remarks
1st July 1926 to 31st March 1927 .	590·91	15·03	26·93	632·87	....	632·87	Interest for 9 months only.
1927-28	632·87	14·95	38·42	686·24	....	686·24	
1928-29	686·24	2·36	41·25	729·85	239·09	490·76	

Present value on 1st July 1926 of Rs. 490·76 lakhs on 1st April 1929 is Rs. 418·10 lakhs.

Therefore, by completing these two Blocks, there is a reduction of loss of Rs. 172·81 lakhs at present value even if no land in Block 1 is sold.

Reduction of loss by completing Block 8 only, at present value, was Rs. 190·60 lakhs.

Therefore, extra cost of completing Block 1, undeveloped, is Rs. 17·79 lakhs, present value.

No credit taken for disposal value of plant.

APPENDIX 3

Cost of Reclamation of Blocks 8, 1 and 2 only

(All figures in lakhs)

Year	Debt out-standing	Expenditure during year	Interest at 6 per cent	Total Capital Expenditure (cols. 1, 2 & 3)	Receipts	Debt at the end of year	Remarks
1st July 1926 to 31st March 1927	590·91	16·27	26·96	634·14	....	634·14	Interest for 9 months only.
1927-28	634·14	16·34	38·54	689·02	....	689·02	
1928-29	689·02	15·75	41·81	746·58	239·09	507·49	
1929-30	507·49	13·39	30·85	551·73	....	551·73	
1930-31	551·73	5·71	33·28	590·72	....	590·72	

Present value on 1st July 1926 of Rs. 590·72 lakhs on 1st April 1931 is Rs. 447·90 lakhs.

Therefore, by completing these three Blocks there is a reduction of loss of Rs. 143·01 lakhs at present value even if no land in Blocks 1 and 2 is sold.

Reduction of loss by completing Blocks 8 and 1 only was found to be Rs. 172·81 lakhs at present value.

Therefore, extra cost of completing Block 2, undeveloped, is Rs. 29·80 lakhs at present value.

APPENDIX 4

COST OF RECLAMATION OF BLOCKS 8, 1, 2 AND 7

(All figures in lakhs)

Year	Debt outstanding	Expenditure during year	Interest at 6 per cent.	Total Capital Expenditure (cols. 1, 2 &3)	Receipts	Debt at the end of year	Remarks
1st July 1926 to 31st March 1927	590·91	31·48	27·30	649·69	....	649·69	Interest for 9 months.
1927-28	649·69	23·87	39·70	713·26	....	713·26	
1928-29 ..	713·26	15·75	43·27	772·28	239·09	533·19	
1929-30 ..	533·19	21·93	32·65	587·77	....	587·77	
1930-31	587·77	5·71	35·44	628·92	....	628·92	

Present value on 1st July 1926 of Rs. 628·92 lakhs on 1st April 1931 is Rs. 476·86 lakhs.

Therefore, by completing these four Blocks, there is a reduction of loss of Rs. 114·05 lakhs at present value even if no land in Blocks 1 and 2 is sold.

Reduction of loss by completing Blocks 8, 1 and 2 only was found to be Rs. 143·01 lakhs at present value.

Therefore, extra cost of completing Block 7, undeveloped, is Rs. 28·96 lakhs at present value.

APPENDIX 5

Copy.

No. E.D./43/A of 1926-1927

Bombay Municipality,
Bombay, 2nd August 1926.

From

H. K. Kirpalani, Esq., I.C.S.,
Municipal Commissioner for the City of Bombay ;

To

The Secretary,
Back Bay Committee.

Sir,

With reference to your letter No. F.A. Dev.-56, dated 27th July 1926, asking for certain information required by your Committee, I have the honour to state as follows :—

It was originally intended to take the sewage from Block No. I northwards to Love Grove by means of the ovoid sewer from Marine Lines and Block No. II was intended to be drained along with the other blocks of the reclamation into the Colaba outfall. But as the construction of this outfall with all subsidiary work is not to be completed for some years, the sewage of the Blocks Nos. I and II, if they are to be completely reclaimed within the near future, will have to be taken for the time being northwards and discharged into the Queen's Road ovoid sewer.

For further particulars regarding this point I would refer you to my letter No. E.D-43-A, dated 15th February 1926, to the Deputy Director, Development (copy sent for ready reference).

It is not proposed to carry the sewage of any other blocks which may be completed hereafter into the Queen's Road sewer as it would not be capable of dealing with it. The construction of the outfall at Colaba was primarily intended to deal with the reclamation and it is impossible to say when the work on this outfall will be commenced until we are in a position to know whether the reclamation is to be completed in its entirety.

* * * *

I have, etc.,
(Signed) H. K. KIRPALANI,
Municipal Commissioner.

Letter No. E.D./43/A, dated 15th February 1926, from the Municipal Commissioner, to the Deputy Director of Development.

Regarding disposal of sewage in Blocks Nos. 1 and 2 in the Back Bay Reclamation

I have the honour to refer to your letter No. 76-(D.B.), dated 11th January 1926, on the above subject, and to state that the nearest sewer for connecting up blocks Nos. 1 and 2 would be the 15″ pipe sewer which runs from Mayo Road along Church Gate Street and finally along the New Marine Lines, discharging into the head of the Queen's Road ovoid sewer (3′ 9″×2′ 6″) opposite the Marine Lines Railway Station ; the invert of the latter sewer is 80·34 T.H.D. and of the former at its junction with Church Gate Street, 86·87 T.H.D. The aforesaid 15″ sewer has however been laid with an extremely flat gradient and is joind bottom to bottom with the Queen's Road ovoid sewer, and it also receives at present nearly half of the sewage of the Colaba District. It is therefore not in a fit condition to receive any further sewage.

Blocks Nos. 1 and 2 could however temporarily be drained by installing a self-contained electrically worked automatic ejector near Church Gate Station to which the sewage therefrom could be converged and discharged through a small C. I. pressure main into the head of the Queen's Road sewer opposite Marine Lines Station.

In the event of the proposed new outfall at Colaba being subsequently extended to Church Gate Station, the sewage from this Ejector Station could be diverted to the Colaba outfall.

I forward herewith a plan marked D.D., dated 25th January 1926, showing the existing Municipal sewers with their sizes and gradients in Mayo Road, Church Gate Street, New Marine Lines and Queen's Road.

Any sewers for these reclaimed areas will, it is understood, be constructed at the expense of the Development Department.

APPENDIX 6

Terms of reference of this Committee

GOVERNMENT OF BOMBAY

DEVELOPMENT DEPARTMENT

Resolution No. S.B.—949

Bombay Castle, 14th June 1926

RESOLUTION OF GOVERNMENT

The Governor in Council is pleased to appoint a committee consisting of the following members to report to Government on the policy to be adopted in connection with the further execution of the Back Bay Reclamation Scheme :—

Chairman

J. A. Kay, Esquire, M.L.C., Chairman, Chamber of Commerce, Bombay.

Members

Lalji Naranji, Esquire, M.L.C., Chairman, Indian Merchants' Chamber, Bombay.

A. Geddis, Esquire, Chairman, Millowners' Association, Bombay.

Rahimtoola M. Chinoy, Esquire, President, Municipal Corporation, Bombay.

Dr. R. P. Paranjpye, D.Sc., M.L.C.

G. B. Pradhan, Esquire, B.A., LL.B., M.L.C.

R. H. A. Delves, Esquire, F.S.I. (subject to the approval of the Board of Trustees for the Improvement of the City of Bombay).

2. The terms of reference should be as follows :—

"Having regard to the present financial position of the scheme, to consider and report to Government, as to what, if any, further portion of the scheme can be undertaken with reasonable prospect of reducing the present loss, and specially with reference to blocks 1 and 2."

3. Under Government Resolution No. S.B.—654, dated 19th April 1926, a committee of engineers has been appointed to check and revise the estimates on which the tables in the second *ad interim* report of the Special Advisory Committee on the scheme have been based. Any estimate of the expenditure necessary for the execution of the whole or of any part of the scheme, which the committee now being constituted may require, will be prepared for them by the Development Department on the basis of figures approved by the committee of engineers.

4. Whenever their presence at meetings of the committee will be useful, the Director of Development and the Secretary to Government, Development Department, should attend to give such advice and information as may be necessary. The committee should further be empowered to call for the attendance, at any meeting of the committee, of any officer at present engaged on the project, and for any facts and figures that may be required in connection with their investigation.

5. The report of the committee will be forwarded to the Government of India, who have decided to place it before the committee of enquiry into the scheme which they have on the 19th of May 1926, announced their decision to appoint.

By order of the Governor in Council,

H. ST. C. SMITH,

Deputy Secretary to Government.

APPENDIX 7

Bombay Scheme No. 1—Back Bay Reclamation

Appointment of a committee of engineers in connection with the—.

GOVERNMENT OF BOMBAY

DEVELOPMENT DEPARTMENT

Resolution no. S.B. 654

Bombay Castle, 19th April 1926

RESOLUTION OF GOVERNMENT

The Governor in Council is pleased to appoint a small committee of engineers to check and revise the estimates on which the tables in the second *ad interim* report of the Special Advisory Committee on the Back Bay Reclamation Scheme have been based. The revised estimates will be prepared in the first instance by the Chief Engineer, Reclamation Branch, as soon as possible after the close of the current working season.

2. The committee will consist of the following members :—

Chairman

(1) Mr. W. H. Neilson, O.B.E., V.D., M.A., M.A.I., M.Inst.C.E., M.I.Mech.E., Chairman, Bombay Port Trust.

Members

(2) Mr. V. N. Vartak, M.A., L.C.E., Superintending Engineer, Public Works Department (on leave).

(3) Mr. C. W. E. Arbuthnot, B.E., B.A. (R.U.I.), Executive Engineer, Presidency Division.

(4) Mr. Jamshedji P. Mistri, B.A., L.C.E., of Messrs. Mistri & Bhedwar.

3. The committee is empowered to call for information from the officers of Government and should be asked to submit their report as soon as possible after receipt from the Chief Engineer, Reclamation Branch, of the results for the current working season.

By order of the Governor in Council,

H. ST. C. SMITH,
Deputy Secretary to Government.

Bombay Scheme No. 1—Back Bay Reclamation

Appointment of a committee of engineers in connection with the—.

GOVERNMENT OF BOMBAY

DEVELOPMENT DEPARTMENT

Resolution no. S. B. 1150

Bombay Castle, 15th July 1926

Read again Government Resolution no. S. B. 654, dated the 19th April 1926.

RESOLUTION.—The Governor in Council is pleased to direct that the following should be added to paragraph 1 of Government Resolution no. S. B. 654, dated the 19th April 1926 :—

" Pending the revision of these estimates, the committee should be requested to check the estimates prepared by the Chief Engineer, Reclamation Branch, for the completion of blocks 1 and 7 after the 1st October 1926, as a decision has to be arrived at immediately whether dredging should be continued next season. The committee should also be requested to examine any figures, of which their approval may be required under paragraph 3 of Government Resolution no. S. B. 949, dated the 14th June 1926."

By order of the Governor in Council,

H. ST. C. SMITH,
Deputy Secretary to Government.

APPENDIX 8

Report of the Committee of Engineers under Mr. W. H. Neilson as Chairman

Harbour Dredging

The main point to be considered is the cost of the dredged filling already done and the probable cost of this filling for future working. The most accurate way to arrive at this figure is to take the quantity of consolidated filling from sections and find the cost per yard of this deposited at site. There are however difficulties in doing this, in this particular case, because during the first two seasons-working, the area pumped into was not sealed, and for the third season, just completed, a large quantity of the material at site is composed of silt still in suspension.

The cost per cubic yard for the first two seasons is therefore to some extent illusive and for the third season an allowance, which is not easy to fix, has to be made for shrinkage and settlement.

The method of deducing the cost from the sections taken in the Harbour can only be looked upon as a check of limited value ; the whole of the material disturbed is not necessarily pumped ashore, and the action of the tides may have some effect on the dredged area. There is also a certain amount of leakage through the floating pipe joints to be taken into account. This total wastage was as much as 34½ per cent., in soft material, when the work of the Mazagon-Sewri Reclamation was carried out. At Karachi, where the material was mostly heavy sand, the wastage was in the neighbourhood of 15 per cent.

The output per pumping hour of the dredger in 1923-24 was the highest reached so far, but the number of hours worked the smallest. The average for the three working seasons was 1,407 hours of actual pumping and, allowing for the exceptional period of 1923-24, it would be safe to assume that 1,600 hours per season can be done. The average number of cubic yards pumped per hour for the last three seasons is 945. Working under the same conditions and in the same material this average should be capable of being maintained.

The number of cubic yards to be dredged per season should be therefore 1,600 × 945= 15,12,000 or allowing say 20 per cent. wastage 12,00,000 cubic yards. The quantity of dredged filling required in Block 7 is 24,00,000 cubic yards or just two seasons work.

The cost, taking the Harbour sections, was Rs. $\frac{20,88,504}{39,50,147}$ = 8·46 annas per cubic yard ; allowing 20 per cent. wastage the cost would be 10·57 annas. This is the check figure.

The cost, taking the sections over the actual filled area completed during the season 1925-26, can now be considered. The areas filled during the seasons 1923-24 and 1924-25 can be left out of account as the loss of material was evidently high. The sections (for 1925-26) give a figure of 22,64,000 cubic yards of material deposited (omitting, of course, the moorum filling) and the cost was Rs. 10,02,563, according to the revised figures sent to the Committee under cover of letter No. D. B. 145 of 19th July from the Director of Development. Shrinkage must now be allowed on this area.

From observation and experiment, this shrinkage will be heavy, and after careful consideration, the Committee consider it prudent to fix the percentage for shrinkage at 40 per cent. This gives a consolidated filling equal to 13,50,000 cubic yards at a cost of 11·88 annas per cubic yard or Rs. 2·75 per brass and this rate has been adopted for the estimate of Block No. 7. This figure will, of course, only hold good if the area is properly sealed.

The quantity still required to complete Block No. 8 will be altered from the estimate of 2,63,394 given by the Bombay Development Department as follows :—

		Cubic yards
By dredging seasons 1923-25		12,00,000
Season 1925-26 measured *in situ* ..	22½ lakhs cubic yards	
Less 40 per cent. shrinkage	9 „ „	
		13,50,000
	Consolidated filling ..	25,50,000
Dry filling deposited up to 31st May 1926..	413,756 cubic. yards	
Less 15 per cent. shrinkage ..	62,063 „	
		3,51,693
		29,01,693
	Total required for Block No. 8 ..	39,09,544

	Cubic yards.
Balance required after 31st May 1926 ..	10,07,851
Less moorum topping 12″ thick ..	3,70,464
	6,37,387
Deduct moorum to be deposited up to 15th October 1926 ..	1,61,500
	4,75,887 cubic yards required to complete Block No. 8.

The cost of moorum filling has been taken by the Bombay Development Department at Rs. 4·92 per brass, and this figure can be adhered to, except that 15 per cent. should be allowed for shrinkage, bringing the cost up to Rs. 5·79 per brass, *i.e.*, Rs. 1·56 per cubic yard.

The rates for developing Plot No. 7 by means of roads, lighting, drains, etc., have not been altered, as no specification has yet been laid down, but the rates are sufficient to cover the highest specifications.

The quantities for filling Block No. 7 have been checked.

The estimated expenditure to complete Block No. 7 will therefore be :—

	Rs.
Moorum filling 97,800 brass at Rs. 5·79	5,66,262
Dredged filling 652,400 (consolidated) at Rs. 2·75	17,94,100
Roads, drains, sewers and lighting	26,43,276
	50,03,638
Establishment charges 13½ per cent.	6,75,362
	56,79,000

[Establishment charges have been estimated by the Committee at 13½ per cent. because the capital programme for next year is about Rs. 30 lakhs (28 lakhs for works and 2 lakhs for superior dredging establishment) and the provision for superior Engineering Establishment is Rs. 3 lakhs and for audit and overhead Rs. 1 lakh, making Rs. 4 lakhs or 13·3 per cent. For year ending March 1925, these charges worked out at 12·38 per cent.]

Back Bay Dredging

The quantity dredged from sections taken in the Back Bay to the end of season 1925-26 was 3,88,640 cubic yards and the cost incurred was Rs. 8,06,322 (the "Jinga" was not at work). So the cost per yard (dredging) was Rs. 2·1, which was distinctly high. This was due to the poor results of the first and the first half of the second working season when the dredger was searching about for a suitable place to dredge.

The output for the season 1925-26 was 3,72,925 yards and the cost was Rs. 4,47,650 (as per letter No. D. B. 145 of 19th July from the Director of Development) or Re. 1-3-3 per cubic yard, *i.e.*, Re. 1-8-0 with 20 per cent. wastage. This did not include the cost of the "Jinga" which was not working.

The data available for estimating costs is scanty. It has been ascertained that Development Directorate estimates have been based on the assumption that the dredged hole will fill up again during the monsoon, as did the hole dredged in 1924-25. The hole made last season is, however of a much greater extent, and, although it may probably fill up, it remains still to be proved that it will fill up before dredging starts next season. The position of the dredger is more exposed than in the Harbour and the difficulties due to shallow water are increased. The material is stiffer and although the loose sand, which it is assumed will gradually occupy the dredged area, is easier for the cutter to work in, it is appreciably heavier than the silt and moorum dredged in the Harbour. Consequently the amount of water to be pumped with it will be greater.

Assuming, however, that there will be a 50 per cent. increase in output when dredging over the area worked on last season, the output would be 22,000 *plus* 11,000 = 33,000 cubic yards per week. So it would take say 11½ weeks to complete this area. Thereafter the rate would be 22,000 cubic yards per week for the remaining period of 12½ weeks or say 2,75,000 cubic yards making (3,72,925 *plus* 2,75,000) 6,48,000 cubic yards for the season 1926-27 or 1,75,000 brass.

From sections taken over the filled area in Block No. 1, the quantity of dredged filling done amounts to 6½ lakhs cubic yards. Out of this quantity, 15,640 cubic yards can be taken as consolidated, due to the work done in 1924-25. The remaining quantity, 6,34,360 was done

last season and is still unconsolidated over a large area. The shrinkage can be taken at 30 per cent. as the material is heavier and settles more quickly round the outlet of the pipes than does the material from the Harbour. This would give an equivalent of 4½ lakhs cubic yards, which cost Rs. 4,47,650 to deposit or say Re. 1 per yard, *i.e.*, Rs. 3-11-0 per brass.

The quantity to be done next year will be about 6½ lakhs cubic yards or 4½ lakhs consolidated, the cost should be (Rs. 4,50,000 *plus* Rs. 1,50,000 for the "Jinga") Rs. 6,00,000 or say Re. 1-5-0 per cubic yard or Rs. 4-14-0 per brass.

The total quantity required to complete Block 1 (undeveloped) is about 3,25,000 brass. Out of this about 70,000 brass will be done by lorries and about 40,000 brass with moorum topping.

The cost will therefore approximate :—

	Rs.
Dredged filling consolidated 2,15,000 brass at Rs. 4-14-0	10,48,125
By lorries 70,000 brass at Rs. 2-8-0	1,75,000
Moorum 40,000 brass at Rs. 5·79	2,31,600
	14,54,725
Add 13½ per cent. for establishment and overhead	1,96,275
	16,51,000

Dated 30th July 1926.

W. H. NEILSON, Chairman.

V. N. VARTAK,
C. W. E. ARBUTHNOT,
JAMSHEDJI P. MISTRY.
} Members of the Committee.

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